

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 f1
 Edition : 29.03.89
 Replaces : 31.7.87
 Test oil : ISO-4113

Combination no. : 0 402 046 758

Injection pump
 Pump designation : PES6P120A320RS3139
 EP type number : 0 412 026 718
 Governor
 Governor design. : RQV275...950PA728-1
 Governor no. : 0 421 813 465

Customer-spec. information
 Customer : RVI

Engine : MIDR 063540

1st version kW : 243.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 23.7...23.9

100 s: (23.4...24.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.50...5.70

Del.quantity cm3/ : 2.3...2.9

100 s: (2.0...3.2)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
 travel mm : 1.30...1.70

2nd speed rpm : 450
 travel mm : 3.30...3.70

3rd speed rpm : 800
 travel mm : 5.60...6.00

4th speed rpm : 950
 travel mm : 6.70...6.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 237.0...239.0

1000 : (234.0...242.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 59...67

Testing:

1st rack travel in: 11.50

Speed rpm : 1020...1030

2nd rack travel in: 4.00

Speed rpm : 1155...1185

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 8...16

Testing:

Speed rpm : 200

Minimum rack travel: 7.30

Speed rpm : 275

Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 1000

Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.40...9.50

2nd pressure hPa : 520

Rack travel in m: 11.70...11.80

3rd pressure hPa : 200

Rack travel in m: 9.80...10.50

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 950

Del.quantity cm³/ : 227.0...233.0

1000 s: (224.0...236.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 120.0...122.0

1000 s: (117.0...125.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1020...1030

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 140.0...160.0

1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 5.40...5.60

Del.quantity cm³/ : 23.0...29.0

1000 s: (20.0...32.0)

Spread cm³ : 8.00

1000 s: (12.00)

Remarks:

:

Start-of-delivery mark 9° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,4 L12
Edition : 14.04.89
Replaces : 12.85
Test oil : ISO-4113

Combination no. : 0 402 046 762

Injection pump
Pump designation : PES6P12QA820LS3077-10
EP type number : 0 412 026 714
Governor
Governor design. : RQ300/1100PA761
Governor no. : 0 421 801 302

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM407A

1st version kW : 177.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 15.2...15.4

100 s: (14.9...15.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 152.0...154.0

1000 : (149.0...157.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 13.5

Testing:

1st rack travel in: 9.50
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack trave: 6.70
Speed rpm : 300
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 360...400

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 152.0...158.0
1000 s: (149.0...161.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 a 4
 Edition : 14.04.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 764
 Injection pump
 Pump designation : PES6P110A820LS3131
 EP type number : 0 412 016 715
 Governor
 Governor design. : RQ300/1100PA779
 Governor no. : 0 421 801 325

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM427h

1st version kW : 177.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.10...11.20

Del.quantity cm³/ : 14.0...14.2

100 s: (13.7...14.5)

Spread cm³ : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.1...7.3

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 140.0...142.0

1000 : (137.0...145.0)

Spread cm³ : 4.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.20

Speed rpm : 1140...1150

2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.2

Testing:

Speed rpm : 100
Minimum rack travel: 8.80
Speed rpm : 300
Rack travel in mm : 7.10...7.30
Rack travel in mm : 2.00
Speed rpm : 360...400

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del. quantity cm³/ : 117.0...121.0
1000 s: (114.0...124.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 a 9
 Edition : 14.04.89
 Replaces : 2.12.86
 Test oil : ISO-4113
 Combination no. : 0 402 046 773
 Injection pump
 Pump designation : PES6P110A820LS3131
 EP type number : 0 412 016 715
 Governor
 Governor design. : RQ300/1100PA800
 Governor no. : 0 421 801 347

Customer spec. information
 Customer : DAIMLER-BENZ

Engine : OM427H

1st version kW : 177.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 13.9...14.1

100 s: (13.6...14.3)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.4

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 139.0...141.0

1000 : (136.5...143.5)

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.00

Speed rpm : 1140...1150

2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3

Testing:

Speed rpm : 100
Minimum rack travel: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 380...420

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 116.0...119.0
1000 s: (113.0...122.0)
Spread cm3 : 6.00
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

Adjust full-load delivery by turning
temperature-dependent excess-fuel stop
for starting (TAS).

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 a10
 Edition : 07.04.89
 Replaces : 31.10.86
 Test oil : ISO-4113
 Combination no. : 0 402 046 775
 Injection pump
 Pump designation : PES6P110A820LS3131
 EP type number : 0 412 016 715
 Governor
 Governor design. : RQ300/1100PA786-1
 Governor no. : 0 421 801 353

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM427H

1st version kW : 177.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 13.9...14.1

100 s: (13.6...14.3)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.4

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 139.0...141.0

1000 : (136.5...143.5)

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.00

Speed rpm : 1140...1150

2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3

Testing:
Speed rpm : 100
Minimum rack trave: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 380...420

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm3/ : 116.0...119.0
1000 s: (113.0...122.0)
Spread cm3 : -
1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

Adjust full-load delivery by turning
temperature-dependent excess-fuel stop
for starting (TAS).

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 f 1
 Edition : 14.04.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 789
 Injection pump
 Pump designation : PES6P120A320RS3139
 EP type number : 0 412 026 718
 Governor
 Governor design. : RQV275...1000PA728-3
 Governor no. : 0 421 813 657

Customer-spec. information
 Customer : RVI

Engine : MIDR 062045 H

1st version kW : 227.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 19.1...19.3

100 s: (18.8...19.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 1.8...2.4

100 s: (1.5...2.7)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 0.90...1.10

2nd speed rpm : 450
 travel mm : 3.30...3.70

3rd speed rpm : 800
 travel mm : 5.60...6.00

4th speed rpm : 1000
 travel mm : 7.00...7.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 191.0...193.0

1000 : (188.0...196.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:

1st rack travel in: 10.00
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:

Speed rpm : 200
Minimum rack travel: 7.10
Speed rpm : 275
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 310...415

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.00...11.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.60...8.80
2nd pressure hPa : 280
Rack travel in m: 10.30...10.40
3rd pressure hPa : 160
Rack travel in m: 9.30...9.50

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm³/ : 187.0...193.0
1000 s: (184.0...196.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 98.0...100.0
1000 s: (95.0...103.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 18.0...24.0
1000 s: (15.0...27.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery mark 9.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 f2
Edition : 07.02.89
Replaces : 20.5.88
Test oil : ISO-4113

Combination no. : 0 402 046 791

Injection pump
Pump designation : PES6P120A32ORS3139
EP type number : 0 412 026 718
Governor
Governor design. : RQV275...950PA728-4
Governor no. : 0 421 813 678

Customer-spec. information
Customer : RVI

Engine : MIDR 063540 H

1st version kW : 264.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.30...13.40

Del.quantity cm³/ : 25.4...25.6

100 s: (25.1...25.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 7.5...7.7

Del.quantity cm³/ : 2.3...2.9

100 s: (2.0...3.2)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.00...1.20

2nd speed rpm : 450
travel mm : 3.30...3.80

3rd speed rpm : 800
travel mm : 5.80...6.00

4th speed rpm : 950
travel mm : 6.80...6.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 254.0...256.0

1000 : (251.0...259.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:

1st rack travel in: 12.30
Speed rpm : 1015...1025
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 275
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION

Speed rpm : 295...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.30...13.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.50...9.70
2nd pressure hPa : 660
Rack travel in m: 12.60...12.70
3rd pressure hPa : 200
Rack travel in m: 10.30...10.50

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 950
Del.quantity cm3/ : 245.0...251.0
1000 s: (242.0...254.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 120.0...122.0
1000 s: (117.0...125.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.30
Speed rpm : 1015...1025

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 23.0...29.0
1000 s: (20.0...32.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery mark 9° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 a11
 Edition : 07.04.89
 Replaces : 7.1.88
 Test oil : ISO-4113
 Combination no. : 0 402 046 793
 Injection pump
 Pump designation : PES6P110A820LS3131
 EP type number : 0 412 016 715
 Governor
 Governor design. : RQ300/1100PA800-1
 Governor no. : 0 421 801 426

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM447h

1st version kW : 150.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.90...10.00

Del.quantity cm3/ : 10.9...11.1

100 s: (10.6...11.3)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.1...7.3

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.4

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 109.0...111.0

1000 : (106.5...113.5)

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 8.90

Speed rpm : 1140...1150

2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.2

Testing:
Speed rpm : 200
Minimum rack trave: 9.50
Speed rpm : 300
Rack travel in mm : 7.10...7.30
Rack travel in mm : 2.00
Speed rpm : 360...400

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm3/ : 80.0...84.0
1000 s: (77.0...87.0)
Spread cm3 : 6.00
1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.90
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)

Remarks:

:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER 12,2 c
Edition : 31.03.89
Replaces : 7.2.89
Test oil : ISO-4113
Combination no. : 0 402 046 797
Injection pump
Pump designation : PES6P120A320RS3212
EP type number : 0 412 026 731
Governor
Governor design. : RQV250..1050PA794-2
Governor no. : 0 421 813 698

Customer-spec. information
Customer : PERKINS

Engine : EAGLE TX

1st version kW : 240.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 14.60...14.70

Del.quantity cm3/ : 23.9...24.1

100 s: (23.6...24.4)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : ?

Del.quantity cm3/ : 1.3...1.7
100 s: (1.0...2.0)

Spread cm3 : 0.3
100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 0.90...1.30

2nd speed rpm : 350
travel mm : 2.90...3.50

3rd speed rpm : 700
travel mm : 4.00...4.60

4th speed rpm : 1000
travel mm : 7.40...7.60

5th speed rpm : 1100
travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 239.0...241.0
1000 : (236.0...244.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 13.60
Speed rpm : 980...990
2nd rack travel in: 4.00
Speed rpm : 1085...1115
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 16...24

Testing:
Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 250
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 250...550

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.60...14.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.20...12.30
2nd pressure hPa : 900
Rack travel in m: 14.10...14.20
3rd pressure hPa : 510
Rack travel in m: 12.60...12.80

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

A18

Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm³/ : 243.0...249.0
1000 s: (240.0...252.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.60
Speed rpm : 980...990

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...170.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.90...6.10

Remarks:

:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,8 r
Edition : 31.03.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 046 804

Injection pump
Pump designation : PES6P110A820LS3222
EP type number : 0 412 016 725
Governor
Governor design. : RQ350/1100PA655-1
Governor no. : 0 421 801 475

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM447h

1st version kW : 132.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
: (4.25...4.45)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 8.80...8.90

Del.quantity cm3/ : 10.3...10.5

100 s: (10.0...10.7)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 7.0...7.3

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.4

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 103.0...105.0

1000 : (100.5...107.5)

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 7.80

Speed rpm : 1095...1110

2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 7.1

Testing:

Speed rpm : 200
Minimum rack trave: 9.50
Speed rpm : 350
Rack travel in mm : 7.00...7.30
Rack travel in mm : 2.00
Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 8.80...8.90
2nd speed rpm : 800
Rack travel in m: 8.90...9.10
3rd speed rpm : 600
Rack travel in m: 9.10...9.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 94.0...98.0
1000 s: (91.0...101.0)
Spread cm3 : 6.00
1000 s: (9.00)

RACK STOP ADJUSTMENT

Speed rpm : 600

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.80
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 u 3
Edition : 14.04.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 046 805

Injection pump
Pump designation : PES6P110A720RS3104
EP type number : 0 412 016 712
Governor
Governor design. : RQV300...1075PA850-3
Governor no. : 0 421 813 743

Customer-spec. information
Customer : KHD

Engine : BF6L413FRC/513RC

1st version kW : 198.0
Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1075
Rack travel in mm : 14.00...14.10
Del. quantity cm³/ : 16.4...16.6
100 s : (16.1...16.9)
Spread cm³ : 0.4
100 s : (0.7)

2nd speed rpm : 300.0
Rack travel in mm : 7.9...8.1
Del. quantity cm³/ : 1.6...2.2
100 s : (1.3...2.4)
Spread cm³ : 0.4
100 s : (0.7)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.00...1.40
2nd speed rpm : 450
travel mm : 2.60...3.20
3rd speed rpm : 650
travel mm : 4.70...5.30
4th speed rpm : 1110
travel mm : 8.20...8.40
5th speed rpm : 1250
travel mm : 9.50...9.90

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1140
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1075
Aneroid pressure h : 900
Del. quantity : 164.0...166.0
1000 : (161.0...169.0)
Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 52...60

Testing:

1st rack travel in: 13.00

Speed rpm : 1105...1115

2nd rack travel in: 4.00

Speed rpm : 1235...1265

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 19...27

Testing:

Speed rpm : 100

Minimum rack travel: 9.40

Speed rpm : 300

Rack travel in mm : 7.90...8.10

CONSTANT REGULATION

Speed rpm : 300...520

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1075

Rack travel in m: 14.00...14.10

2nd speed rpm : 700

Rack travel in m: 14.20...14.40

3rd speed rpm : 850

Rack travel in m: 14.10...14.30

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 900

Rack travel mm : 14.20...14.30

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 12.40...12.60

2nd pressure hPa : 510

Rack travel in m: 13.70...13.80

3rd pressure hPa : 375

Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 700

Del.quantity cm³/ : 170.0...174.0

1000 s: (168.0...176.0)

Aneroid pressure h: -

Speed rpm : 450

Del.quantity cm³/ : 123.0...125.0

1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 1105...1115

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 170.0...200.0

1000 s: (166.0...204.0)

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 u 4
 Edition : 14.04.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 806
 Injection pump
 Pump designation : PES6P110A72ORS3104
 EP type number : 0 412 016 712
 Governor
 Governor design. : RQV300...1150PA850-4
 Governor no. : 0 421 813 745

Customer-spec. information
 Customer : KHD

Engine : BF6L513RC

1st version kW : 210.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness : 6.00X1.50X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

A23

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 16.5...16.7

100 s : (16.2...17.0)

Spread cm³ : 0.4

100 s : (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 7.6...7.8

Del.quantity cm³/ : 1.2...1.6

100 s : (0.9...1.9)

Spread cm³ : 0.4

100 s : (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.40

2nd speed rpm : 450
 travel mm : 2.60...3.20

3rd speed rpm : 650
 travel mm : 3.30...3.90

4th speed rpm : 1195
 travel mm : 8.30...8.50

5th speed rpm : 1330
 travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1190

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h : 900

Del.quantity : 165.0...167.0

1000 : (162.0...170.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control Lever
position degrees: 52...60

Testing:

1st rack travel in: 13.00
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1315...1345
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 19...27

Testing:

Speed rpm : 100
Minimum rack travel: 9.20
Speed rpm : 300
Rack travel in mm : 7.60...7.80

CONSTANT REGULATION

Speed rpm : 300...550

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 14.00...14.10
2nd speed rpm : 750
Rack travel in m: 14.20...14.40
3rd speed rpm : 850
Rack travel in m: 14.10...14.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.20...14.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.40...12.60
2nd pressure hPa : 510
Rack travel in m: 13.70...13.80
3rd pressure hPa : 375
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 170.0...174.0
1000 s: (168.0...176.0)
Aneroid pressure h: -
Speed rpm : 450
Del.quantity cm³/ : 123.0...125.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...200.0
1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 a14
 Edition : 08.05.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 807
 Injection pump
 Pump designation : PES6P110A820LS3131-1
 EP type number : 0 412 016 717
 Governor
 Governor design. : RQV300..1100PA916
 Governor no. : 0 421 813 748

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM447

1st version kW : 168.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 13.7...13.9

100 s: (13.4...14.1)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.4

100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.10...1.40

2nd speed rpm : 450
 travel mm : 3.40...3.80

3rd speed rpm : 1150
 travel mm : 7.90...8.30

4th speed rpm : 1225
 travel mm : 9.10...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 137.0...139.0

1000 : (134.5...141.5)

Spread cm³ : 4.00
 1000 : (8.00)

Remarks:

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:

1st rack travel in: 9.90
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 20...28

Testing:

Speed rpm : 200
Minimum rack travel: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40

CONSTANT REGULATION

Speed rpm : 300...500

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 113.0...116.0
 1000 s: (110.0...119.0)
Spread cm³ : 5.00
 1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
 1000 s: (126.0...154.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 a15
 Edition : 08.05.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 808
 Injection pump
 Pump designation : PES6P110A820LS3131-1
 EP type number : 0 412 016 717
 Governor
 Governor design. : RQV300..1100PA916-1
 Governor no. : 0 421 813 749

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM447

1st version kW : 177.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 13.9...13.9

100 s: (13.6...14.1)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.4

100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.10...1.40

2nd speed rpm : 450
 travel mm : 3.40...3.80

3rd speed rpm : 1150
 travel mm : 7.90...8.30

4th speed rpm : 1225
 travel mm : 9.10...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 139.0...139.0

1000 : (136.5...141.5)

Spread cm³ : 4.00
1000 : (8.00)

Remarks:

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:

1st rack travel in: 9.90
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 20...28

Testing:

Speed rpm : 200
Minimum rack travel: 8.80
Speed rpm : 300
Rack travel in mm : 7.20...7.40

CONSTANT REGULATION

Speed rpm : 300...500

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 116.0...119.0
1000 s: (113.0...122.0)
Spread cm³ : 5.00
1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 m
 Edition : 28.04.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 809
 Injection pump
 Pump designation : PES6P120A720LS3229
 EP type number : 0 412 026 733
 Governor
 Governor design. : RQ750PA661-2
 Governor no. : 0 421 801 343

Customer spec. information
 Customer : MAN

Engine : D2866LE

1st version kW : 230.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
 : (3.75...3.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 28.1...28.3

100 s: (27.8...28.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.7...7.3

Del.quantity cm3/ : 2.4...3.0

100 s: (2.1...3.3)

Spread cm3 : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 281.0...283.0

1000 : (278.0...286.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 13.40

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 787...800

4th rack travel in: 950

Speed rpm : 0.00...1.00

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:
: MAN-NR. 2-7970

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 15,6 a
Edition : 2.5.89
Replaces : 2.84
Test oil : ISO-4113
Combination no. : 0 402 068 700
Injection pump
Pump designation : PES8P110A120RS3044
Governor
Governor design. : RSV400...1050P2/435D
R

Customer-spec. information
Customer : JOHN DEERE

Engine : 8955 T

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.5

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6,00x1,50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.75...2.85
: (2.70...2.90)
Rack travel in mm : 9.00...12.00
Firing order : 1-5-6-3-4-2-7-8

Phasing : 0-45-90-135-180-225-

B03

Tolerance + - ° : 270-315
: 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm³/ : 14.7...14.9

100 s: (14.3...15.3)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 750
Rack travel in mm : 12.00...12.20
Del.quantity cm³/ : 16.4...16.7
100 s: (15.8...17.3)
Spread cm³ : 0.6
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050
Aneroid pressure h: 680
Del.quantity : 147.0...149.0
1000 : (143.0...153.0)
Spread cm³ : 4.0
1000 : (7.5)

RATED SPEED

1st version

Control lever
position degrees: 40...48

Testing:

1st rack travel in: 10.10
Speed rpm : 1095...1105
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1275
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack trave: 16.00
Speed rpm : 400
Rack travel in mm : 5.50...5.70
Speed rpm : 800
Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 11.05...11.15
2nd speed rpm : 750
Rack travel in m: 11.95...12.25
3rd speed rpm : 550
Rack travel in m: 10.35...10.45

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : 380
Rack travel mm : 11.37...11.65

Measurement

Speed 1/min : 550

1st pressure hPa : 280
Rack travel in m: 10.60...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 680
Speed rpm : 750
Del.quantity cm3/ : 164.0...167.0
1000 s: (158.0...173.0)
Spread cm3 : 6.0
1000 s: (9.0)
Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 130.0...134.0
1000 s: (124.0...140.0)
Spread cm3 : 6.0
1000 s: (9.0)

BREAKAWAY

1st version

B04

1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...200.0
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1155
Del.quantity cm3/ : 37.0...47.0
1000 s: (31.0...53.0)

LOW IDLE

Speed rpm : 400
Del.quantity cm3/ : 22.0...28.0
1000 s: (18.00...32.0)

Remarks:

Start-of-delivery mark 16° cam angle
after start of delivery cyl. 8

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 10,0 m1
 Edition : 14.04.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 075 701
 Injection pump
 Pump designation : PES5P110A720LS3221
 EP type number : 0 412 015 701
 Governor
 Governor design. : RSV350...1100POA487-
 8
 Governor no. : 0 421 833 315

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM449

1st version kW : 147.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
 : (4.25...4.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 14.4...14.4

100 s: (14.1...14.6)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 6.3...6.7

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Del.quantity : 144.0...144.0

1000 : (141.5...146.5)

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 10.50

Speed rpm : 1130...1140

2nd rack travel in: 4.00

Speed rpm : 1190...1220
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.5
Speed rpm : 350
Rack travel in mm : 6.30...6.70
Rack travel in mm : 2.00
Speed rpm : 470...530

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 124.0...128.0
1000 s: (121.0...131.0)
Spread cm³ : 6.00
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1130...1140

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (136.0...164.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VAL 7,2 a
Edition : 10.02.89
Replaces : 19.5.88
Test oil : ISO-4113

Combination no. : 0 402 076 056

Injection pump
Pump designation : PES6P110A320RS505
EP type number : 0 412 016 072
Governor
Governor design. : RSV325...1150POA522
Governor no. : 0 421 833 242

Customer-spec. information
Customer : VALMET

Engine : 612 DSJ

1st version kW : 165.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Rack travel in mm : 9.00...12.00

807

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 13.8...14.1

100 s: (13.5...14.3)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 325.0

Rack travel in mm : 7.4...7.6

Del.quantity cm3/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm3 : 0.3

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 700

Del.quantity : 138.0...141.0

1000 : (135.5...143.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 11.00

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1290...1310
4th rack travel in: 1460
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.0

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 325
Rack travel in mm : 7.40...7.60
Rack travel in mm : 2.00
Speed rpm : 480...540

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 700
Rack travel in m: 12.00...12.10
2nd speed rpm : 1150
Rack travel in m: 11.90...12.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 12.00...12.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.80
2nd pressure hPa : 400
Rack travel in m: 11.50...11.60
3rd pressure hPa : 270
Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 102.0...105.0
1000 s: (99.5...107.5)

BREAKAWAY

1st version

B08

1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 7.40...7.60
Del.quantity cm3/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm3 : 3.00
1000 s: (6.00)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y 1
Edition : 07.04.89
Replaces : 20.12.88
Test oil : ISO-4113

Combination no. : 0 402 076 722

Injection pump
Pump designation : PES6P120A720RS3203
EP type number : 0 412 026 728
Governor
Governor design. : RSV400...1100P2A534
Governor no. : 0 421 833 275

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466 HF-050

1st version kW : 194.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X3.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
: (3.50...3.70)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 15.6...15.8

100 s: (15.4...16.1)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 4.8...5.0

Del.quantity cm3/ : 1.7...2.2

100 s: (1.5...2.5)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 156.5...158.5

1000 : (154.0...161.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 11.00
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1200...1210
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 4.80...5.00
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 750
Rack travel in m: 12.80...13.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.50

Measurement

Speed 1/min : 500

1st pressure hPa : 605
Rack travel in m: 11.00...11.10
2nd pressure hPa : 780
Rack travel in m: 12.10...12.50
3rd pressure hPa : 1200
Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 174.5...179.5
1000 s: (172.0...182.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm3/ : 117.5...121.5
1000 s: (114.5...124.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

: JOHN DEERE # RE32035
Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 v
Edition : 07.04.88
Replaces : 20.12.88
Test oil : ISO-4113

Combination no. : 0 402 076 723

Injection pump
Pump designation : PES6P120A720RS3203
EP type number : 0 412 026 728
Governor
Governor design. : RSV400...1100P2A534-
1
Governor no. : 0 421 833 276

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466 AF-050

1st version kW : 180.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X3.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
(3.50...3.70)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.80...11.90

Del.quantity cm³/ : 15.0...15.2

100 s: (14.7...15.4)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 4.8...5.0

Del.quantity cm³/ : 1.7...2.2

100 s: (1.5...2.5)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 150.0...152.0

1000 : (147.5...154.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 10.80
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1200...1210
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 4.80...5.00
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.80...11.90
2nd speed rpm : 700
Rack travel in m: 12.60...12.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.60...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.40...10.60
2nd pressure hPa : 720
Rack travel in m: 11.00...11.10
3rd pressure hPa : 895
Rack travel in m: 11.80...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm3/ : 173.5...178.5
1000 s: (171.0...181.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm3/ : 120.0...124.0
1000 s: (117.0...127.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

: JOHN DEERE # RE32033

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 10,1 f
Edition : 07.04.89
Replaces : 30.9.88
Test oil : ISO-4113

Combination no. : 0 402 076 726

Injection pump
Pump designation : PES6P110A720RS3209
EP type number : 0 412 016 722
Governor
Governor design. : RSV400...1050POA537
Governor no. : 0 421 833 287

Customer-spec. information
Customer : JOHN DEERE

Engine : 6619 AT 06

1st version kW : 172.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X3.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55
: (3.40...3.60)
Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.20...11.30

Del.quantity cm³/ : 16.7...16.9

100 s : (16.5...17.2)

Spread cm³ : 0.4

100 s : (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 5.0...5.2

Del.quantity cm³/ : 1.6...2.1

100 s : (1.3...2.3)

Spread cm³ : 0.4

100 s : (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 167.5...169.5

1000 : (165.0...172.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 10.20

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1150...1160

3rd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 520...580

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 11.20...11.30
2nd speed rpm : 700
Rack travel in m: 11.60...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm3/ : 171.5...176.5
1000 s: (169.0...179.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 175.0...195.0
1000 s: (170.0...200.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 16.0...21.0
1000 s: (13.5...23.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

: JOHN DEERE # RE33898

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark at 14° angular
displacement of the cam after start of
delivery of cylinder 1 with control-rod
travel = 10.50 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 b
Edition : 07.04.89
Replaces : 30.9.88
Test oil : ISO-4113

Combination no. : 0 402 076 727

Injection pump
Pump designation : PES6P120A720RS3203
EP type number : 0 412 026 728
Governor
Governor design. : RSV400...1100P2A534-
2
Governor no. : 0 421 833 290

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076AF

1st version kW : 160.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x3.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

B15

Prestroke mm : 3.55...3.65
(3.50...3.70)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 13.4...13.6

100 s: (13.1...13.8)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 4.8...5.0

Del.quantity cm3/ : 1.7...2.2

100 s: (1.5...2.5)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 134.0...136.0

1000 : (131.5...138.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 10.10
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1200...1210
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 4.80...5.00
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.10...11.20
2nd speed rpm : 700
Rack travel in m: 12.40...12.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.50...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 470
Rack travel in m: 11.20...11.30
2nd pressure hPa : 605
Rack travel in m: 11.80...12.20
3rd pressure hPa : 900
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 165.5...170.5
1000 s: (163.0...173.0)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm³/ : 122.0...126.0
1000 s: (121.0...131.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 4.80...5.00
Del.quantity cm³/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

: JOHN DEERE # RE32034

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 c
Edition : 07.04.89
Replaces : 20.12.88
Test oil : ISO-4113

Combination no. : 0 402 076 728

Injection pump
Pump designation : PES6P120A72ORS3203
EP type number : 0 412 026 728
Governor
Governor design. : RSV425...1050P2A489-
2
Governor no. : 0 421 833 291

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076 HRW01

1st version kW : 175.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X3.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
: (3.50...3.70)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm³/ : 16.0...16.2

100 s: (15.7...16.4)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 425.0
Rack travel in mm : 4.8...5.0
Del.quantity cm³/ : 1.7...2.2
100 s: (1.5...2.5)
Spread cm³ : 0.4
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1200

Del.quantity : 160.0...162.0

1000 : (157.5...164.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 11.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1170
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 4.80...5.00
Rack travel in mm : 2.00
Speed rpm : 570...630

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.20...12.30
2nd speed rpm : 600
Rack travel in m: 13.40...13.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.40...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.10...12.30
2nd pressure hPa : 725
Rack travel in m: 12.50...12.60
3rd pressure hPa : 815
Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm³/ : 191.0...196.0
1000 s: (188.5...198.5)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm³/ : 157.0...161.0
1000 s: (154.0...164.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 4.80...5.00
Del.quantity cm³/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

: JOHN DEERE # RE32888

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 10,1 g
Edition : 07.04.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 076 730
Injection pump
Pump designation : PES6P110A720RS3217
EP type number : 0 412 016 724
Governor
Governor design. : RSV550...1050P2A534-3
Governor no. : 0 421 833 304

Customer-spec. information
Customer : JOHN DEERE

Engine : 6619AT07

1st version kW : 201.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness : 6.00X3.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55
: (3.40...3.60)
Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050
Rack travel in mm : 11.70...11.80
Del.quantity cm3/ : 18.6...18.8
100 s: (18.3...19.0)
Spread cm3 : 0.4
100 s: (0.7)

2nd speed rpm : 550.0
Rack travel in mm : 5.2...5.4
Del.quantity cm3/ : 3.1...3.6
100 s: (2.9...3.9)
Spread cm3 : 0.4
100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 900
Del.quantity : 186.0...188.0
1000 : (183.5...190.5)
Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 39...47

Testing:
1st rack travel in: 10.70
Speed rpm : 1095...1105
2nd rack travel in: 4.00

Speed rpm : 1165...1175
4th rack travel in: 1275
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 550
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 550
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 680...740

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 11.70...11.80
2nd speed rpm : 700
Rack travel in m: 12.50...12.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.50...12.70

Measurement

Speed 1/min : 500
1st pressure hPa : -
Rack travel in m: 10.60...10.80
2nd pressure hPa : 425
Rack travel in m: 11.20...11.30
3rd pressure hPa : 675
Rack travel in m: 12.00...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 201.5...206.5
1000 s: (199.0...209.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 158.0...162.0
1000 s: (155.0...165.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 165.0...185.0
1000 s: (160.0...190.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 550
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 31.5...36.5
1000 s: (29.0...39.0)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

: JOHN DEERE # RE36078

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 10,1 g1
 Edition : 07.04.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 076 731
 Injection pump
 Pump designation : PES6P110A720RS3217
 EP type number : 0 412 016 724
 Governor
 Governor design. : RSV400...1050P2A534-4
 Governor no. : 0 421 833 305
 Customer-spec. information
 Customer : JOHN DEERE

Engine : 6101 H

1st version kW : 224.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness : 6.00X3.00X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55
 : (3.40...3.60)

Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 21.2...21.4

100 s: (20.9...21.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 2.6...3.1

100 s: (2.3...3.3)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1200

Del.quantity : 212.0...214.0

1000 : (209.5...216.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in: 11.90

Speed rpm : 1090...1100

2nd rack travel in: 4.00
Speed rpm : 1165...1175
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 14...22
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 570...630

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.90...13.00
2nd speed rpm : 700
Rack travel in m: 13.70...13.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.70...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.90...11.10
2nd pressure hPa : 325
Rack travel in m: 11.60...11.70
3rd pressure hPa : 640
Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm³/ : 228.0...233.0
1000 s: (225.5...235.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 160.0...164.0
1000 s: (157.0...167.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 165.0...185.0
1000 s: (160.0...190.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 26.0...31.0
1000 s: (23.5...33.5)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

: JOHN DEERE # RE36881

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 g
 Edition : 07.04.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 076 733
 Injection pump
 Pump designation : PES6P110A72ORS3224
 EP type number : 0 412 016 726
 Governor
 Governor design. : RSV475...1050P2A534-
 5
 Governor no. : 0 421 833 313
 Customer-spec. information
 Customer : JOHN DEERE
 Engine : 6101 AT 001
 1st version kW : 170.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X3.00X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29
 Prestroke mm : 3.35...3.45
 : (3.30...3.50)

Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 12.90...13.00
 Del.quantity cm3/ : 15.9...16.1
 100 s: (15.7...16.3)
 Spread cm3 : 0.4
 100 s: (0.6)
 2nd speed rpm : 475.0
 Rack travel in mm : 5.3...5.5
 Del.quantity cm3/ : 0.9...1.3
 100 s: (0.7...1.6)
 Spread cm3 : 0.6
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 700
 Del.quantity : 159.5...161.5
 1000 : (157.5...163.5)
 Spread cm3 : 4.00
 1000 : (6.50)

RATED SPEED

1st version
 Control lever
 position degrees: 34...42

Testing:
 1st rack travel in: 11.90
 Speed rpm : 1090...1100

2nd rack travel in: 4.00
Speed rpm : 1150...1160
3rd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 14...22
Setting point w/out bumper spring
Speed rpm : 475
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 475
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.00
Speed rpm : 600...660

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 12.90...13.00

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.00...11.20
2nd pressure hPa : 145
Rack travel in m: 11.50...11.60
3rd pressure hPa : 290
Rack travel in m: 12.30...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 113.0...117.0
1000 s: (111.0...119.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 175.0...195.0
1000 s: (170.0...200.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 475
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 9.5...13.5
1000 s: (7.0...16.0)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE39856

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark at 14° angular
displacement of the cam after start of
delivery of cylinder 1 with control-rod
travel = 10.50 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,8 r
Edition : 29.03.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 076 734

Injection pump
Pump designation : PES6P110A820LS3131-1
EP type number : 0 412 016 717
Governor
Governor design. : RSV350..1100POA487-9
Governor no. : 0 421 833 316

Customer spec. information
Customer : DAIMLER-BENZ

Engine : OM447

1st version kW : 168.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40
: (4.25...4.45)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 13.5...13.7

100 s: (13.2...13.9)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 6.8...7.1

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Del.quantity : 135.0...137.0

1000 : (132.5...139.5)

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 45...53

Testing:

1st rack travel in: 10.00

Speed rpm : 1130...1140
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1350
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.9

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00
Speed rpm : 400...440

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 111.0...115.0
1000 s: (108.0...118.0)
Spread cm3 : 6.00
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1130...1140

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)

Remarks:

:

Note remarks

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Speed rpm : 1275
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1800
Del.quantity : 310.0...312.0
1000 : (307.0...315.0)
Spread cm3 : 6.00
1000 : (10.00)

RATED SPEED

1st version

Control lever
position degrees: 60...68

Testing:

1st rack travel in: 13.30
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1270...1300
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 200
Minimum rack trave: 6.30
Speed rpm : 350
Rack travel in mm : 5.00...5.60
Rack travel in mm : 7.00
Speed rpm : 250...0
Speed rpm : 500
Maximum rack trave: 3.00

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 6.30...6.60

Measurement

Speed 1/min : 500

1st pressure hPa : 400
Rack travel in m: 7.70...7.80
2nd pressure hPa : 1200
Rack travel in m: 11.90...12.20

START CUT-OUT

B28

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800
Speed rpm : 750
Del.quantity cm3/ : 301.0...311.0
1000 s: (298.0...314.0)
Spread cm3 : 10.00
1000 s: (15.0)
Aneroid pressure h: 1800
Speed rpm : 1150
Del.quantity cm3/ : 240.0...243.0 *
1000 s: (237.0...246.0)
Spread cm3 : 10.00
1000 s: (15.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 94.0...96.0
1000 s: (91.0...99.0)
Spread cm3 : 10.00
1000 s: (15.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 330.0...350.0
1000 s: (326.0...354.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 b
Edition : 31.03.89
Replaces : 10.2.89
Test oil : ISO-4113

Combination no. : 0 402 646 836

Injection pump
Pump designation : PE6P120A720RS7126
EP type number : 0 412 626 815
Governor
Governor design. : RQV200...1000PA725-1
Governor no. : 0 421 813 552

Customer-spec. information
Customer : SAAB-SCANIA

Engine : DSC11 18

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00

CO1

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.10...14.20

Del.quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 225.0
Rack travel in mm : 4.5...4.9
Del.quantity cm3/ : 1.5...1.9
100 s: (-)
Spread cm3 : 0.3
100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
travel mm : 1.20...1.60
2nd speed rpm : 350
travel mm : 2.40...3.00
3rd speed rpm : 650
travel mm : 4.40...5.00
4th speed rpm : 1045
travel mm : 8.40...8.60
5th speed rpm : 1160
travel mm : 9.90...10.30

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1040
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 900
Del.quantity : 234.0...236.0
1000 : (231.0...239.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:
1st rack travel in: 13.10
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 100
Minimum rack travel: 6.10
Speed rpm : 225
Rack travel in mm : 4.50...4.70
Rack travel in mm : 2.00
Speed rpm : 340...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.10...14.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.90
2nd pressure hPa : 575
Rack travel in m: 13.00...13.10
3rd pressure hPa : 405
Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm³/ : 223.0...231.0
1000 s: (221.0...233.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 150.0...154.0
1000 s: (148.0...156.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.10
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 275.0...325.0
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.50...4.70

Remarks:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on 1988-09-21

Start of delivery - engine: 13° before
TDC

Firing sequence of engine:
1-5-3-6-2-4.

Note remarks

Combination no. : 0 402 646 843

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM441 LA

1st version kW : 240.0
Rated speed : 2100

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Test pressure, bar: 25...27

```
Prestroke mm      : 5.20...5.30
                  : (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order      : 6- 3- 5- 2- 4- 1
```

Phasing : 0-60-120-180-240-300

Tolerance \pm ⁰ : 0.50 (0.75)

Time to cyl. no. : 6

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm³/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)

Spread cm3 : 0.6
100 s: (1.0)

(B) Setting of injection pump
with governor

1st speed rpm : 300
travel mm : 1.20...1.40

```
2nd speed    rpm    : 600
travel mm    : 4.90...5.10
```

```
3rd speed      rpm      : 1075
travel mm      : 7.40...7.60
```

4th speed rpm : 1100
travel mm : 8.00...8.40

5th speed rpm : 1150
travel mm : 9.00...9.40

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.80...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h : 900
Del.quantity : 211.0...213.0
1000 : (208.0...216.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 13.80
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 15...23

Testing:
Speed rpm : 200
Minimum rack trave: 7.90
Speed rpm : 300
Rack travel in mm : 5.70...6.00

CONSTANT REGULATION
Speed rpm : 300...450

TORQUE CONTROL
Dimension a mm : 0.30
2nd speed rpm : 1050
Rack travel in m: 14.80...15.00
3rd speed rpm : 800
Rack travel in m: 15.00...15.20
4th speed rpm : 700

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.90...14.10

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.70...10.90
2nd pressure hPa : 550
Rack travel in m: 12.70...12.90

C04

3rd pressure hPa : 1050
Rack travel in m: 14.00...14.10 *
4th pressure hPa : 1150
Rack travel in m: 14.40...14.60
5th pressure hPa : -
Rack travel in m: 9.00...9.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1450
Speed rpm : 1050
Del.quantity cm3/ : 236.0...239.0
1000 s: (233.0...242.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1450
Speed rpm : 800
Del.quantity cm3/ : 242.0...246.0
1000 s: (239.0...249.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 133.0...135.0
1000 s: (130.0...138.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)
Rack travel in mm : 200.00...220.00

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 9,0 m
Edition : 17.02.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 646 853
Injection pump
Pump designation : PE6P120A320RS7138
EP type number : 0 412 626 822
Governor
Governor design. : RQ200/1100PA873
Governor no. : 0 421 801 415

Customer-spec. information
Customer : SAAB-SCANIA

Engine : DS9 05

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
: (4.35...5.55)
Rack travel in mm : 9.00...12.00

C05

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 16.5...16.7

100 s: (16.2...17.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 225.0

Rack travel in mm : 5.1...5.7

Del.quantity cm3/ : 2.1...2.5

100 s: (-)

Spread cm3 : 0.3

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: 48...50

Speed rpm : 600

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 165.0...167.0

1000 : (162.0...170.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.5

Testing:

1st rack travel in: 11.20

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1275...1305

4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 225

Rack travel in mm : 5.0

Testing:

Speed rpm : 100

Minimum rack travel: 6.40

Speed rpm : 225

Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00

Speed rpm : 310...350

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 900

Rack travel mm : 12.20...12.30

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.60...11.00

2nd pressure hPa : 360

Rack travel in m: 11.80...11.90

3rd pressure hPa : 240

Rack travel in m: 11.00...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1100

Del.quantity cm3/ : 163.0...171.0

1000 s: (161.0...173.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 125.0...129.0

1000 s: (123.0...131.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 1145...1160

STARTING FUEL DELIVERY

C06

Speed rpm : 100
Del.quantity cm3/ : 270.0...320.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.90...5.10

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 h
 Edition : 31.03.89
 Replaces : 10.2.89
 Test oil : ISO-4113
 Combination no. : 0 402 646 858
 Injection pump
 Pump designation : PE6P120A720RS7151
 EP type number : 0 412 626 824
 Governor
 Governor design. : RQ200/900PA713-4
 Governor no. : 0 421 801 424

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DSCII 04

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.70...12.80
 Del.quantity cm³/ : 17.4...17.6
 100 s: (17.1...17.9)
 Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 225.0
 Rack travel in mm : 4.8...5.2
 Del.quantity cm³/ : 1.6...2.0
 100 s: (-)
 Spread cm³ : 0.3
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 1.20...1.60
 2nd speed rpm : 350
 travel mm : 2.80...3.40
 3rd speed rpm : 650
 travel mm : 3.70...4.30
 4th speed rpm : 950
 travel mm : 4.60...4.80
 5th speed rpm : 1065
 travel mm : 6.40...6.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del.quantity : 174.0...176.0
 1000 : (171.0...179.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 16.5

Testing:

1st rack travel in: 11.70
Speed rpm : 945...960
2nd rack travel in: 4.00
Speed rpm : 1050...1080
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 225
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 6.40
Speed rpm : 225
Rack travel in mm : 4.80...5.00
Rack travel in mm : 2.00
Speed rpm : 310...350

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 11.40...11.80

2nd pressure hPa : 395

Rack travel in m: 12.50...12.60

3rd pressure hPa : 345

Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 900
Del.quantity cm³/ : 171.0...179.0
1000 s: (169.0...181.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 145.0...149.0
1000 s: (143.0...151.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 945...960

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.80...5.00

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 3.0...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over
on Sep. 5, 1988

Start of delivery - engine: 9° before
TDC

Firing sequence of engine:
1-5-3-6-2-4.

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a 1
Edition : 24.02.89
Replaces : 22.4.88
Test oil : ISO-4113

Combination no. : 0 402 648 812

Injection pump
Pump designation : PE8P120A320LS7801
EP type number : 0 412 628 806
Governor
Governor design. : RQ300/1050PA717
Governor no. : 0 421 801 258

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 320.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600
Rack travel in mm : 14.70...14.90
Del.quantity cm3/ : 22.0...22.2
100 s: (21.7...22.5)
Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 6.1...6.7
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 680
Del.quantity : 220.0...222.0
1000 : (217.0...225.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.40
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.4

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.10...6.70
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.90
2nd speed rpm : 1050
Rack travel in m: 15.20...15.40
3rd speed rpm : 850
Rack travel in m: 15.80...16.10

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 680
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : 310
Rack travel in m: 12.10...12.30
2nd pressure hPa : 470
Rack travel in m: 13.70...13.90
3rd pressure hPa : 820
Rack travel in m: 14.90...15.00
4th pressure hPa : 1100
Rack travel in m: 15.90...16.00
5th pressure hPa : -
Rack travel in m: 11.40...11.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1150
Speed rpm : 1050
Del.quantity cm3/ : 229.0...232.0
1000 s: (226.0...235.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1150
Speed rpm : 850
Del.quantity cm3/ : 247.0...251.0
1000 s: (244.0...254.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.40
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a 4
Edition : 28.11.88
Replaces : 27.10.88
Test oil : ISO-4113

Combination no. : 0 402 648 817

Injection pump
Pump designation : PE8P120A32OLS7801
EP type number : 0 412 628 806
Governor
Governor design. : RQ300/1050PA762-5
Governor no. : 0 421 801 399

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 260.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.10...14.30

Del.quantity cm3/ : 20.3...20.5

100 s: (20.0...20.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 650

Del.quantity : 203.0...205.0

1000 : (200.0...208.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 6.00...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75
2nd speed rpm : 1050
Rack travel in m: 12.80...13.00
3rd speed rpm : 850
Rack travel in m: 13.70...14.00
4th speed rpm : 700
Rack travel in m: 14.40...14.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 650
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 12.40...12.60
2nd pressure hPa : 400
Rack travel in m: 13.40...13.70
3rd pressure hPa : 850
Rack travel in m: 14.20...14.30 *
4th pressure hPa : -
Rack travel in m: 11.40...11.70
5th pressure hPa : 1050
Rack travel in m: 14.40...14.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1050
Speed rpm : 1050
Del.quantity cm3/ : 180.0...183.0
1000 s: (177.0...186.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1050
Speed rpm : 700
Del.quantity cm3/ : 215.0...219.0
1000 s: (212.0...222.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1050
Speed rpm : 850
Del.quantity cm3/ : 206.0...210.0
1000 s: (203.0...213.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 175.0...190.0
1000 s: (171.0...194.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a 5
 Edition : 29.03.89
 Replaces : 3.3.89
 Test oil : ISO-4113

Combination no. : 0 402 648 825

Injection pump
 Pump designation : PE8P120A320LS7801
 EP type number : 0 412 628 806
 Governor
 Governor design. : RGV300..1050PA797-3
 Governor no. : 0 421 813 627

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 260.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.10...14.30

Del.quantity cm3/ : 20.3...20.5

100 s: (20.0...20.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.20...1.40

2nd speed rpm : 600

travel mm : 4.90...5.10

3rd speed rpm : 1075

travel mm : 7.40...7.60

4th speed rpm : 1100

travel mm : 8.00...8.20

5th speed rpm : 1150

travel mm : 9.00...9.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500
Aneroid pressure h: 650
Del.quantity : 203.0...205.0
1000 : (200.0...208.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 51...59

Testing:

1st rack travel in: 11.80
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 13...21

Testing:

Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in mm : 6.00...6.40

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 1.40
2nd speed rpm : 1050
Rack travel in m: 12.70...12.90
3rd speed rpm : 850
Rack travel in m: 13.70...14.00
4th speed rpm : 700
Rack travel in m: 14.30...14.50

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 650
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 300

Rack travel in m: 12.40...12.60

C14

2nd pressure hPa : 400

Rack travel in m: 13.40...13.70

3rd pressure hPa : 850

Rack travel in m: 14.20...14.30 *

4th pressure hPa : -

Rack travel in m: 11.30...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1050
Speed rpm : 1050
Del.quantity cm³/ : 180.0...183.0
1000 s: (177.0...186.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1050
Speed rpm : 700
Del.quantity cm³/ : 215.0...219.0
1000 s: (212.0...222.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1050
Speed rpm : 850
Del.quantity cm³/ : 206.0...210.0
1000 s: (203.0...213.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 175.0...190.0
1000 s: (171.0...194.0)

Remarks:

:

* Increase in control-rod travel with

respect to setting at least 0.1 mm



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 14,2 i
Edition : 07.02.89
Replaces : 20.11.87
Test oil : ISO-4113

Combination no. : 0 402 648 827

Injection pump
Pump designation : PE8P120A920/4LS7016
EP type number : 0 412 628 814
Governor
Governor design. : RQV200...950PA547-7
Governor no. : 0 421 813 550

Customer-spec. information
Customer : SCANIA

Engine : DSC14 06

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-
6- 8

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 19.0...19.2

100 s: (18.7...19.5)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 225.0

Rack travel in mm : 4.9...5.4

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.3)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
travel mm : 1.20...1.60

2nd speed rpm : 350
travel mm : 2.30...2.90

3rd speed rpm : 650
travel mm : 4.40...5.00

4th speed rpm : 995
travel mm : 7.80...8.00

5th speed rpm : 1105
travel mm : 9.10...9.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1030

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 190.0...192.0

1000 : (187.0...195.0)

Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 55...63

Testing:

1st rack travel in: 11.60
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1090...1120
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 225
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 360...420

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.60...12.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.10...11.50
2nd pressure hPa : 215
Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 950
Del.quantity cm³/ : 184.0...192.0
 1000 s: (182.0...194.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 158.0...162.0
 1000 s: (156.0...164.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...290.0
 1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.90...5.10

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on 1986-09-16

Start of delivery - engine: 17° before
TDC

Engine firing sequence: 1-5-4-2-6-3-7-8

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a 9
Edition : 28.04.89
Replaces : 2.12.86
Test oil : ISO-4113

Combination no. : 0 402 648 842

Injection pump
Pump designation : PE8P120A320LS7801-1
EP type number : 0 412 628 818
Governor
Governor design. : RQV350..950PA866-2
Governor no. : 0 421 813 673

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 275.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 930

Rack travel in mm : 13.50...13.60

Del.quantity cm³/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...5.5

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 0.60...0.80

2nd speed rpm : 425
travel mm : 2.40...2.60

3rd speed rpm : 800
travel mm : 5.30...5.60

4th speed rpm : 1000
travel mm : 7.80...8.20

5th speed rpm : 1120
travel mm : 9.50...10.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : ?

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 930
Aneroid pressure h: 950
Del.quantity : 211.0...213.0
1000 : (208.0...216.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 60...68

Testing:

1st rack travel in: 12.50
Speed rpm : 980...990
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:

Speed rpm : 250
Minimum rack travel: 7.60
Speed rpm : 350
Rack travel in mm : 5.00...5.50

CONSTANT REGULATION

Speed rpm : 350...500

TORQUE CONTROL

Dimension a mm : 1.10
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 13.50...13.60
2nd speed rpm : 800
Rack travel in m: 14.60...14.80
3rd speed rpm : 875
Rack travel in m: 13.80...14.00

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : -
Rack travel mm : 10.50...10.90

Measurement

Speed 1/min : 600

1st pressure hPa : 450

Rack travel in m: 11.30...11.50

2nd pressure hPa : 700

Rack travel in m: 13.40...13.60

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 950
Speed rpm : 800
Del.quantity cm³/ : 233.0...237.0
1000 s: (230.0...240.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 950
Speed rpm : 930
Del.quantity cm³/ : 167.0...169.0 *
1000 s: (164.0...172.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 143.0...145.0
1000 s: (140.0...148.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

Speed rpm : 980...990

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (186.0...214.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 14,5 e
Edition : 07.04.89
Replaces : 4.11.88
Test oil : ISO-4113

Combination no. : 0 402 648 851

Injection pump
Pump designation : PE8P120A520LS7818
EP type number : 0 412 628 830
Governor
Governor design. : RQV250...1150PA902
Governor no. : 0 421 813 720

Customer spec. information
Customer : MAN

Engine : D2848LXE 40

1st version kW : 500.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
: (4.45...4.65)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 28.9...29.1

100 s: (28.6...29.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250

Rack travel in mm : 7.30...7.50

Del.quantity cm3/ : 5.2...6.0 *

100 s: (-)

3rd speed rpm : 500

Rack travel in mm : 8.20...8.40

Del.quantity cm3/ : <125.0 **

100 s: (-)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.40...1.60

2nd speed rpm : 450

travel mm : 3.40...4.00

3rd speed rpm : 850

travel mm : 6.30...6.90

4th speed rpm : 1150

travel mm : 9.40...9.60

5th speed rpm : 1450

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1210

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 289.0...291.0
1000 : (286.0...294.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 57...65

Testing:

1st rack travel in: 12.50
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1280...1310
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 19...27

Testing:

Speed rpm : 100
Minimum rack travel: 8.90
Speed rpm : 250
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 430...490

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.90...9.10

2nd pressure hPa : 100

Rack travel in m: 9.30...9.40

3rd pressure hPa : 470

Rack travel in m: 11.90...12.20

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0 *
1000 s: (-)

LOW IDLE

Speed rpm : 500
Rack travel in mm : <7.50
Del.quantity cm3/ : <50.0 **
1000 s: (-)

Remarks:

: MAN-NR. 2-7944

* applies to cylinders 2, 3, 4 and 8

** applies for cylinders 1, 5, 6, and 7

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 p
Edition : 29.03.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 852

Injection pump
Pump designation : PE8P120A920/4LS7166
EP type number : 0 412 628 832
Governor
Governor design. : RQ750PA758-2
Governor no. : 0 421 801 462

Customer-spec. information
Customer : SAAB-SCANIA

Engine : DS 14

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-
6- 8

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 25.2...25.4
100 s: (24.9...25.7)

Spread cm3 : 0.7
100 s: (1.0)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 252.0...254.0
1000 : (249.0...257.0)
Spread cm3 : 7.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 26...34

Testing:
1st rack travel in: 11.50
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 784...797
4th rack travel in: 850
Speed rpm : 0.00...1.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 750...755

HIGH IDLE

1st version

Rack travel in mm : 5.00...5.20
Spread cm³ : 4.00
1000 s: (7.00)

Remarks:

:

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

APPLICATION

Generator

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 17,2 e
Edition : 29.03.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 648 854
Injection pump
Pump designation : PE8P130A920/5LS7822
EP type number : 0 412 638 802
Governor
Governor design. : RQV300...950PA905
Governor no. : 0 421 813 723

Customer spec. information
Customer : IVECO-FIAT

Engine : 8280.42.001

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 40...45
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 688 750 074

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20
: (5.05...5.25)
Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 4- 3- 6- 5-
7- 2

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 22.5...22.8

100 s: (22.1...23.1)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.7...2.3

100 s: (1.3...2.7)

Spread cm3 : 1.0

100 s: (1.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.20...1.40

2nd speed rpm : 425
travel mm : 3.20...3.80

3rd speed rpm : 650
travel mm : 4.90...5.50

4th speed rpm : 950
travel mm : 7.90...8.10

5th speed rpm : 1200
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 975

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550

Aneroid pressure h: 900

Del.quantity : 225.0...228.0

1000 : (221.5...231.5)

Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 57...65

Testing:
1st rack travel in: 10.70
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16

Testing:
Speed rpm : 100
Minimum rack travel: 7.20
Speed rpm : 300
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION
Speed rpm : 320...425

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.70...11.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.90
2nd pressure hPa : 440
Rack travel in m: 11.10...11.20
3rd pressure hPa : 400
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 950
Del.quantity cm³/ : 222.0...229.0
1000 s: (218.5...232.5)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 168.0...171.0
1000 s: (164.5...174.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.70
Speed rpm : 990...1000

INTERMEDIATE RATED SPEED
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...230.0
1000 s: (196.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.60...5.80
Del.quantity cm³/ : 17.0...23.0
1000 s: (13.0...27.0)
Spread cm³ : 10.00
1000 s: (14.00)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

Note remarks

Combination no. : 0 402 648 855

Customer-spec. information
Customer : DAIMLER-BENZ

1st version kW : 353.0
Rated speed : 2100

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Test pressure, bar: 25...27

```
Prestroke mm      : 5.20...5.30
                  : (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order      : 8- 7- 2- 6- 3- 5-
                  : 4- 1-
```

Phasing : 0-45-90-135-180-225-
270-315

Tolerance \pm ° : 0.50 (0.75)

Time to cyl. no. : 8

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/ : 23.4...23.7

100 s: (23.1...24.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...5.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm^3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

1st speed rpm : 350
travel mm : 1.90...2.10

2nd speed rpm : 800

travel mm : 4.90...5.20

3rd speed rpm : 1100

travel mm : 7.90...8.30

4th speed rpm : 1175

travel mm : 9.30...9.90

Control-Lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 900
Del.quantity : 234.0...237.0
1000 : (231.0...240.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 53...61

Testing:

1st rack travel in: 13.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 18...26

Testing:

Speed rpm : 250
Minimum rack trave: 7.10
Speed rpm : 350
Rack travel in mm : 5.00...5.60

CONSTANT REGULATION

Speed rpm : 350...550

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 14.40...14.60
3rd speed rpm : 800
Rack travel in m: 14.90...15.10

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.10...11.30
2nd pressure hPa : 1050
Rack travel in m: 13.70...13.90
3rd pressure hPa : 1250
Rack travel in m: 14.50...14.70

4th pressure hPa : 1400
Rack travel in m: 14.80...15.00
5th pressure hPa : -
Rack travel in m: 9.90...10.20

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm³/ : 252.0...256.0
1000 s: (249.0...259.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm³/ : 263.0...267.0
1000 s: (260.0...270.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 p
Edition : 29.03.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 858

Injection pump
Pump designation : PE8P120A32OLS7816-10
EP type number : 0 412 628 836
Governor
Governor design. : RQ300/1050PA717-2
Governor no. : 0 421 801 439

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 353.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm³/ : 23.4...23.7

100 s : (23.1...24.0)

Spread cm³ : 0.6

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm³/ : 1.6...2.2

100 s : (1.3...2.5)

Spread cm³ : 0.6

100 s : (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 234.0...237.0

1000 : (231.0...240.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.40
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 5.90...6.50
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.40
2nd speed rpm : 1050
Rack travel in m: 14.40...14.60
3rd speed rpm : 800
Rack travel in m: 14.90...15.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.10...11.30
2nd pressure hPa : 650
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1050
Rack travel in m: 13.70...13.90 *
4th pressure hPa : 1500
Rack travel in m: 14.80...15.00
5th pressure hPa : -
Rack travel in m: 9.90...10.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm3/ : 252.0...256.0
1000 s: (249.0...259.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 263.0...267.0
1000 s: (260.0...270.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

Note remarks

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Test pressure, bar: 25...27

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 930
Aneroid pressure h: 950
Del.quantity : 206.0...208.0
1000 : (203.0...211.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 51...59

Testing:

1st rack travel in: 12.00
Speed rpm : 980...990
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 18...26

Testing:

Speed rpm : 250
Minimum rack travel: 7.60
Speed rpm : 350
Rack travel in mm : 5.00...5.50

CONSTANT REGULATION

Speed rpm : 350...550

TORQUE CONTROL

Dimension a mm : 1.70
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 12.90...13.10
2nd speed rpm : 800
Rack travel in m: 14.60...14.80
3rd speed rpm : 900
Rack travel in m: 13.40...13.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : -
Rack travel mm : 10.90...11.30

Measurement

Speed 1/min : 600

1st pressure hPa : 450

D03

Rack travel in m: 11.70...11.90
2nd pressure hPa : 700
Rack travel in m: 13.80...14.00

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 950
Speed rpm : 750
Del.quantity cm³/ : 229.0...233.0
1000 s: (226.0...236.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 950
Speed rpm : 930
Del.quantity cm³/ : 167.0...169.0 *
1000 s: (164.0...172.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 143.0...145.0
1000 s: (140.0...148.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 980...990

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (186.0...214.0)

Remarks:

:

* = Set at reduced-delivery stop.

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a12
Edition : 29.03.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 862

Injection pump
Pump designation : PE8P120A320LS7801-3
EP type number : 0 412 628 838
Governor
Governor design. : RQ300/1050PA762-5
Governor no. : 0 421 801 399

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 260.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500
Rack travel in mm : 14.10...14.30
Del.quantity cm³/ : 20.3...20.5
100 s: (20.0...20.8)
Spread cm³ : 0.5
100 s: (0.9)
2nd speed rpm : 300.0
Rack travel in mm : 6.0...6.4
Del.quantity cm³/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm³ : 0.6
100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 500
Aneroid pressure h: 650
Del.quantity : 203.0...205.0
1000 : (200.0...208.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 6.00...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75
2nd speed rpm : 1050
Rack travel in m: 12.80...13.00
3rd speed rpm : 850
Rack travel in m: 13.70...14.00
4th speed rpm : 700
Rack travel in m: 14.40...14.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 650
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 12.40...12.60
2nd pressure hPa : 400
Rack travel in m: 13.40...13.70
3rd pressure hPa : 850
Rack travel in m: 14.20...14.30 *
4th pressure hPa : -
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1050
Speed rpm : 1050
Del.quantity cm3/ : 180.0...183.0
1000 s: (177.0...186.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1050
Speed rpm : 700
Del.quantity cm3/ : 215.0...219.0
1000 s: (212.0...222.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1050
Speed rpm : 850
Del.quantity cm3/ : 206.0...210.0
1000 s: (203.0...213.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 175.0...190.0
1000 s: (171.0...194.0)

Remarks:

:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 q
Edition : 11.05.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 864

Injection pump
Pump designation : PE8P120A320LS7816
EP type number : 0 412 628 829
Governor
Governor design. : RQ300/950PA762-7
Governor no. : 0 421 801 480

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 353.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del. quantity cm³/ : 23.4...23.7

100 s: (23.1...24.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 2.00...2.40

2nd speed rpm : 600
travel mm : 5.90...6.10

3rd speed rpm : 950
travel mm : 6.20...6.50

4th speed rpm : 1020
travel mm : 6.50...6.90

5th speed rpm : 1075
travel mm : 9.00...9.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 900
Del.quantity : 234.0...237.0
1000 : (231.0...240.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.70
Speed rpm : 995...910
2nd rack travel in: 4.00
Speed rpm : 1050...1080
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack trave: 7.80
Speed rpm : 300
Rack travel in mm : 5.90...6.50
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.10...11.30
2nd pressure hPa : 650
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1055
Rack travel in m: 16.70...16.90
4th pressure hPa : 1500
Rack travel in m: 14.80...15.00
5th pressure hPa : -

Rack travel in m: 9.90...10.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 950
Del.quantity cm³/ : 261.0...264.0
1000 s: (258.0...267.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm³/ : 263.0...267.0
1000 s: (260.0...270.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.70
Speed rpm : 995...910

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

Note remarks

Combination no. : 0 402 670 804

Customer-spec. information
Customer : DAIMLER-BENZ

1st version kW : 441.0
Rated speed : 1500

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Test pressure, bar: 25...27

```
Prestroke mm      : 5.20...5.30
                   : (5.15...5.35)
Rack travel in mm : 19.00...21.00
Firing order      : 12- 1- 5- 9- 8- 3-
                   : 4- 11- 10- 2- 6- 7
```

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
345

Tolerance + - ⁰ : 0.50 (0.75)

Time to cyl. no. : 12

1st speed rpm : 700

Rack travel in mm : 15.90...16.00

Del.quantity cm³/ : 26.7...26.9

100 s: (26.4...27.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.1...5.3

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 267.0...269.0

1000 : (264.0...272.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 20...28

Testing:

1st rack travel in: 14.90
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 775...788
4th rack travel in: 900
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 9...17
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.2
Speed rpm : 350
Rack travel in mm : 5.10...5.30

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.10
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:

Observe VDT-I-420/120

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 14,2 c
Edition : 05.06.87
Replaces : 10.84
Test oil : ISO-4113

Combination no. : 0 402 678 800

Injection pump
Pump designation : PE8P120A920/4LS7002
EP type number : 0 412 628 800
Governor
Governor design. : RSV350...1100P1/484
Governor no. : 0 421 833 122

Customer-spec. information
Customer : SAAB-SCANIA

Engine : DS14..., DSI14..

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00

D10

Firing order : 1- 2- 7- 3- 4- 5-
6- 8

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 18.7...18.9

100 s: (18.4...19.2)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 4.4...4.6
Del.quantity cm3/ : 1.0...1.4
100 s: (-)
Spread cm3 : 0.3
100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 187.0...189.0
1000 : (184.0...192.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 12.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00

Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 27...35
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 4.0
Speed rpm : 350
Rack travel in mm : 3.90...4.10
Rack travel in mm : 2.00
Speed rpm : 440...500

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1000
Del.quantity cm³/ : 184.0...192.0
1000 s: (182.0...194.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...290.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.40...4.60
Del.quantity cm³/ : 10.0...14.0
Spread cm³ : 3.00
1000 s: (6.00)

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Check and set without ROBO diaphragm

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on August 29, 1983

Start of delivery - engine:
DS 14 - 18° before TDC
DSI 14 - 17° before TDC

Engine firing sequence: 1-5-4-2-6-3-7-8

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a13
Edition : 30.03.87
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 678 804

Injection pump
Pump designation : PE8P120A320LS7801-1
EP type number : 0 412 628 818
Governor
Governor design. : RSV350...1050POA825-4
Governor no. : 0 421 833 261

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442A

1st version kW : 255.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (4.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.70...15.80

Del.quantity cm³/ : 24.1...24.3

100 s: (23.8...24.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 241.0...243.0

1000 : (238.0...246.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 74...82

Testing:

1st rack travel in: 14.70
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 1135...1150
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 60...68
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 350...410

SET IDLE AUXILIARY SPRING

Speed rpm : 2.00

TORQUE CONTROL

2nd speed rpm : 900
Rack travel in m: 13.20...13.40
3rd speed rpm : 1000
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 246.0...252.0
1000 s: (243.0...255.0)
Spread cm³ : 8.00
1000 s: (12.0)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 250.0...270.0
1000 s: (246.0...274.0)

Remarks:

:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 g 5
Edition : 21.04.89
Replaces : 9.9.88
Test oil : ISO-4113

Combination no. : 0 402 678 810

Injection pump
Pump designation : PE8P120A320LS7801-2
EP type number : 0 412 628 825
Governor
Governor design. : RSV450...1050POA541
Governor no. : 0 421 833 303

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442A

1st version kW : 260.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (4.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 18.1...18.3

100 s: (17.8...18.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 450.0

Rack travel in mm : 4.9...5.2

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Aneroid pressure h: 1100

Del.quantity : 181.0...183.0

1000 : (178.0...186.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 38...46

Testing:
1st rack travel in: 11.70
Speed rpm : 1060...1070
2nd rack travel in: 4.00
Speed rpm : 1110...1130
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 450
Rack travel in mm : 4.90...5.20
Rack travel in mm : 2.00
Speed rpm : 460...520

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1030
Rack travel in m: 12.70...12.80
2nd speed rpm : 950
Rack travel in m: 13.10...13.30
3rd speed rpm : 800
Rack travel in m: 13.80...14.00
4th speed rpm : 700
Rack travel in m: 14.30...14.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.00...11.30

Measurement
Speed 1/min : 500

1st pressure hPa : 420
Rack travel in m: 11.70...11.90
2nd pressure hPa : 600
Rack travel in m: 13.40...13.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1100
Speed rpm : 700
Del.quantity cm³/ : 213.0...217.0
1000 s: (210.0...220.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 143.0...145.0
1000 s: (140.0...148.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1060...1070

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

Remarks:

APPLICATION

Forage harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 r
Edition : 29.03.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 678 812

Injection pump
Pump designation : PE8P120A320LS7801-2
EP type number : 0 412 628 825
Governor
Governor design. : RSV350...1050POA535-
2
Governor no. : 0 421 833 318

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442A

1st version kW : 260.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness : 6.00X1.50X1000
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (4.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 18.1...18.3

100 s: (17.8...18.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.1...5.4
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1030
Aneroid pressure h: 1100
Del.quantity : 181.0...183.0
1000 : (178.0...186.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 36...44

Testing:
1st rack travel in: 11.70
Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.2

Testing:
Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 5.10...5.40
Rack travel in mm : 2.00
Speed rpm : 410...480

SET IDLE AUXILIARY SPRING
Rack travel in mm : 2.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1030
Rack travel in m: 12.80...12.90
2nd speed rpm : 950
Rack travel in m: 13.10...13.30
3rd speed rpm : 830
Rack travel in m: 13.80...14.00
4th speed rpm : 700
Rack travel in m: 14.40...14.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.20...11.50

Measurement
Speed 1/min : 500

1st pressure hPa : 420
Rack travel in m: 11.90...12.10
2nd pressure hPa : 600
Rack travel in m: 13.60...13.80

FUEL DELIVERY CHARACTERISTICS

D17

1st version
Aneroid pressure h: 1100
Speed rpm : 700
Del.quantity cm3/ : 213.0...217.0
1000 s: (210.0...220.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 143.0...145.0
1000 s: (140.0...148.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...200.0
1000 s: (176.0...204.0)

Remarks:

Observe VDT-I-420/120

APPLICATION

Snow plough

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 10,0 m
Edition : 14.04.89
Replaces : 7.10.88
Test oil : ISO-4113

Combination no. : 0 402 745 805

Injection pump
Pump designation : PES5P120A720LS7160
EP type number : 0 412 725 802
Governor
Governor design. : RQ300/1050PA774-2
Governor no. : 0 421 801 450

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM449 A

1st version kW : 184.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.10...13.30

Del.quantity cm3/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.3

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 650

Del.quantity : 196.0...198.0

1000 : (193.0...201.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.60
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.0

Testing:

Speed rpm : 200
Minimum rack travel: 7.90
Speed rpm : 300
Rack travel in mm : 5.70...6.30
Rack travel in mm : 2.00
Speed rpm : 365...405

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.60...13.80
2nd speed rpm : 750
Rack travel in m: 14.00...14.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 650
Rack travel mm : 13.10...13.30

Measurement

Speed 1/min : 600
1st pressure hPa : 250
Rack travel in m: 11.20...11.40
2nd pressure hPa : 400
Rack travel in m: 12.50...12.70
3rd pressure hPa : 750
Rack travel in m: 13.20...13.30 *
4th pressure hPa : 850
Rack travel in m: 13.60...13.80
5th pressure hPa : -
Rack travel in m: 10.80...11.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 208.0...211.0
1000 s: (205.0...214.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 216.0...220.0
1000 s: (213.0...223.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 150.0...152.0
1000 s: (147.0...155.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.60
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MBN 10,0 o
Edition : 29.03.89
Replaces : 3.3.89
Test oil : ISO-4113

Combination no. : 0 402 745 806

Injection pump
Pump designation : PES5P120A720LS7163
EP type number : 0 412 725 803
Governor
Governor design. : RQ300/1050PA774-4
Governor no. : 0 421 801 453

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM449 LA

1st version kW : 221.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/ : 23.5...23.7

100 s: (23.2...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 235.0...237.0

1000 : (232.0...240.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.7

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.60...5.90
Rack travel in mm : 2.00
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.65
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.00...13.20
2nd speed rpm : 750
Rack travel in m: 14.40...14.60

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 11.00...11.20
2nd pressure hPa : 450
Rack travel in m: 13.00...13.20
3rd pressure hPa : 1000
Rack travel in m: 13.70...13.80 *
4th pressure hPa : 1125
Rack travel in m: 14.10...14.30
5th pressure hPa : -
Rack travel in m: 10.00...10.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1050
Del.quantity cm3/ : 228.0...231.0
1000 s: (225.0...234.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 750
Del.quantity cm3/ : 250.0...254.0
1000 s: (247.0...257.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 146.0...148.0
1000 s: (143.0...151.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 10,0 r
Edition : 08.05.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 745 807

Injection pump
Pump designation : PES5P120A720LS7174
EP type number : 0 412 725 806
Governor
Governor design. : RQ300/1050PA774-2
Governor no. : 0 421 801 450

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM449 A

1st version kW : 184.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.10...13.30

Del.quantity cm³/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.3

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 650

Del.quantity : 196.0...198.0

1000 : (193.0...201.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.60
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.0

Testing:

Speed rpm : 200
Minimum rack travel: 7.90
Speed rpm : 300
Rack travel in mm : 5.70...6.30
Rack travel in mm : 2.00
Speed rpm : 365...405

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.60...13.80
2nd speed rpm : 750
Rack travel in m: 14.00...14.20

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 650
Rack travel mm : 13.10...13.30

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 11.20...11.40
2nd pressure hPa : 400
Rack travel in m: 12.50...12.70
3rd pressure hPa : 750
Rack travel in m: 13.20...13.30 *
4th pressure hPa : 850
Rack travel in m: 13.60...13.80
5th pressure hPa : -
Rack travel in m: 10.80...11.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 208.0...211.0
1000 s: (205.0...214.0)
Spread cm3 : 8.00
1000 s: (12.)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 216.0...220.0
1000 s: (213.0...223.0)
Spread cm3 : 8.00
1000 s: (12.00)
Speed rpm : 500
Del.quantity cm3/ : 150.0...152.0
1000 s: (147.0...155.0)
Spread cm3 : 8.00
1000 s: (12.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Testing:

1st rack travel in: 12.00
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.7

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.60...5.90
Rack travel in mm : 2.00
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.65
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.00...13.20
2nd speed rpm : 750
Rack travel in m: 14.40...14.60

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : 200
Rack travel in m: 10.00...11.20
2nd pressure hPa : 450
Rack travel in m: 134.00...13.20
3rd pressure hPa : 1000
Rack travel in m: 13.70...13.80 *
4th pressure hPa : 1125
Rack travel in m: 14.10...14.30
5th pressure hPa : -
Rack travel in m: 10.00...10.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 1050
Del.quantity cm3/ : 228.0...231.0
1000 s: (225.0...234.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1400
Speed rpm : 750
Del.quantity cm3/ : 250.0...254.0
1000 s: (247.0...257.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 146.0...148.0
1000 s: (143.0...151.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a4
 Edition : 29.03.89
 Replaces : 7.2.89
 Test oil : ISO-4113

Combination no. : 0 402 746 817

Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...900PA848-4K
 Governor no. : 0 421 815 173

Customer-spec. information
 Customer : MACK

Engine : EC6-350 4VH

1st version kW : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 15.20...15.30

Del.quantity cm3/ : 25.0...25.2

100 s: (24.7...25.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.9...5.1

Del.quantity cm3/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 3.10...3.30

3rd speed rpm : 850

travel mm : 5.90...6.10

4th speed rpm : 1000

travel mm : 7.50...7.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 250.5...252.5

1000 : (247.5...255.5)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:
1st rack travel in: 14.20
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1090...1120
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 6.40
Speed rpm : 325
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 15.20...15.30
2nd speed rpm : 625
Rack travel in m: 15.50...15.60
3rd speed rpm : 700
Rack travel in m: 15.40...15.60
4th speed rpm : 500
Rack travel in m: <15.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 625
Pressure hPa : 1200
Rack travel mm : 15.50...15.60

Measurement

Speed 1/min : 625

1st pressure hPa : -
Rack travel in m: 8.30...8.70
2nd pressure hPa : 280
Rack travel in m: 10.40...10.50
3rd pressure hPa : 650
Rack travel in m: 13.30...13.70

D27

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm³/ : 278.0...284.0
1000 s: (275.0...287.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 130.5...134.5
1000 s: (128.5...136.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.20
Speed rpm : 950...960

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...160.0
1000 s: (110.0...170.0)
Rack travel in mm : 8.30...8.70

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 b6
 Edition : 29.03.89
 Replaces : 7.2.89
 Test oil : ISO-4113

Combination no. : 0 402 746 825

Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...900PA878-5K
 Governor no. : 0 421 815 182

Customer-spec. information
 Customer : MACK

Engine : EC6-350 4VH

1st version kW : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 15.20...15.30

Del.quantity cm³/ : 25.0...25.2

100 s: (24.7...25.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.9...5.1

Del.quantity cm³/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 3.10...3.30

3rd speed rpm : 850
 travel mm : 5.90...6.10

4th speed rpm : 1000
 travel mm : 7.50...7.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 250.5...252.5

1000 : (247.5...255.5)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:
1st rack travel in: 14.20
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1090...1120
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 6.40
Speed rpm : 325
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 15.20...15.30
2nd speed rpm : 625
Rack travel in m: 15.50...15.60
3rd speed rpm : 700
Rack travel in m: 15.40...15.60
4th speed rpm : 500
Rack travel in m: <15.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 625
Pressure hPa : 1200
Rack travel mm : 15.50...15.60

Measurement
Speed 1/min : 625

1st pressure hPa : -
Rack travel in m: 8.30...8.70
2nd pressure hPa : 280
Rack travel in m: 10.40...10.50
3rd pressure hPa : 650
Rack travel in m: 13.30...13.70

E01

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm3/ : 278.0...284.0
1000 s: (275.0...287.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 130.5...134.5
1000 s: (128.5...136.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.20
Speed rpm : 950...960

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...160.0
1000 s: (110.0...170.0)
Rack travel in mm : 8.30...8.70

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.90...5.10
Del.quantity cm3/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 f 1
Edition : 29.03.89
Replaces : 7.3.88
Test oil : ISO-4113

Combination no. : 0 402 746 830

Injection pump
Pump designation : PES6P120A720LS7107
EP type number : 0 412 726 801
Governor
Governor design. : RQV350..1100PA886
Governor no. : 0 421 813 691

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM447ha

1st version kW : 206.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 19.7...19.9
100 s: (19.4...20.2)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 5.2...5.5
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 2.20...2.40
2nd speed rpm : 580
travel mm : 3.80...4.20
3rd speed rpm : 1150
travel mm : 8.00...8.50
4th speed rpm : 1230
travel mm : 9.20...9.80

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1160
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1080

Aneroid pressure h: 750
Del.quantity : 197.0...199.0
1000 : (194.0...202.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:
1st rack travel in: 12.40
Speed rpm : 1120...1130
2nd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 250
Minimum rack travel: 7.50
Speed rpm : 350
Rack travel in mm : 5.20...5.50

CONSTANT REGULATION
Speed rpm : 350...550

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.70...11.00

Measurement
Speed 1/min : 500

1st pressure hPa : 230
Rack travel in m: 11.00...11.20
2nd pressure hPa : 370
Rack travel in m: 12.40...12.60

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 750

E03

Speed rpm : 600
Del.quantity cm3/ : 196.0...200.0
1000 s: (193.0...203.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 750
Speed rpm : 1080
Del.quantity cm3/ : 150.0...152.0 *
1000 s: (147.0...155.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1120...1130

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

Remarks:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,0 a 2
Edition : 29.03.89
Replaces : 3.3.89
Test oil : ISO-4113

Combination no. : 0 402 746 841

Injection pump
Pump designation : PES6P120A720LS7114-2
EP type number : 0 412 726 815
Governor
Governor design. : RQ300/1050PA774-3
Governor no. : 0 421 801 451

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM447 LA

1st version kW : 265.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.20

Del.quantity cm³/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.20
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.0
Speed rpm : 300
Rack travel in mm : 5.80...6.20
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : ?
2nd speed rpm : 1050
Rack travel in m: 14.20...14.40
3rd speed rpm : 700
Rack travel in m: 14.70...14.90

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 12.50...12.70
2nd pressure hPa : 500
Rack travel in m: 14.10...14.30
3rd pressure hPa : 1100
Rack travel in m: 14.90...15.10 *
4th pressure hPa : 1200
Rack travel in m: 15.20...15.40
5th pressure hPa : -
Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1050

Del.quantity cm3/ : 234.0...238.0
1000 s: (231.0...341.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 700
Del.quantity cm3/ : 246.0...249.0
1000 s: (243.0...252.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 146.0...148.0
1000 s: (143.0...151.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.20
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1a15
 Edition : 07.04.89
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 746 846

Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...850PA848-23
 K
 Governor no. : 0 421 815 204

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E6 300 4VH

1st version kW : 224.0
 Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

E06

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 20.0...20.2
 100 s: (19.7...20.5)

Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.5...4.7
 Del.quantity cm3/ : 3.2...3.8
 100 s: (3.0...4.0)

Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40
 2nd speed rpm : 450
 travel mm : 2.80...3.10
 3rd speed rpm : 850
 travel mm : 6.20...6.40
 4th speed rpm : 1000
 travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1100
 Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 900

Del.quantity : 200.0...202.0
1000 : (197.0...205.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 11.90
Speed rpm : 900...910
2nd rack travel in: 4.00
Speed rpm : 1025...1055
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 4.50...4.70
Rack travel in mm : 2.00

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.90...13.00
2nd speed rpm : 700
Rack travel in m: 13.60...13.70
3rd speed rpm : 600
Rack travel in m: 13.80...13.90
4th speed rpm : 500
Rack travel in m: 0.00...13.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.30...10.50
2nd pressure hPa : 250

Rack travel in m: 11.20...11.30
3rd pressure hPa : 475
Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm3/ : 237.0...243.0
1000 s: (234.0...246.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 154.0...158.0
1000 s: (152.0...160.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 900...910

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 195.0...235.0
1000 s: (185.0...245.0)
Rack travel in mm : 10.30...10.50

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm3/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1a16
Edition : 07.04.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 847

Injection pump
Pump designation : PES6P120A720RS7135
EP type number : 0 412 726 807
Governor
Governor design. : RQV325...850PA878-8K
Governor no. : 0 421 815 205

Customer spec. information
Customer : MACK TRUCKS

Engine : E6 300 4VH

1st version kW : 224.0
Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
: (2.70...2.90)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 20.0...20.2

100 s: (19.7...20.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del.quantity cm3/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 1.20...1.40

2nd speed rpm : 450
travel mm : 2.80...3.10

3rd speed rpm : 850
travel mm : 6.20...6.40

4th speed rpm : 1000
travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del.quantity : 200.0...202.0

1000 : (197.0...205.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:

1st rack travel in: 11.90
Speed rpm : 900...910
2nd rack travel in: 4.00
Speed rpm : 1025...1055
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 275
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 4.50...4.70
Rack travel in mm : 2.00

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 850
Rack travel in m: 12.90...13.00
2nd speed rpm : 700
Rack travel in m: 13.60...13.70
3rd speed rpm : 600
Rack travel in m: 13.80...13.90
4th speed rpm : 500
Rack travel in m: 0.00...13.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.30...10.50
2nd pressure hPa : 250
Rack travel in m: 11.20...11.30
3rd pressure hPa : 475

Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm3/ : 237.0...243.0
1000 s: (234.0...246.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 154.0...158.0
1000 s: (152.0...160.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 900...910

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 195.0...235.0
1000 s: (185.0...245.0)
Rack travel in mm : 10.30...10.50

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm3/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1a17
 Edition : 07.04.89
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 746 849

Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...850PA878-10
 K
 Governor no. : 0 421 815 209

Customer spec. information
 Customer : MACK TRUCKS

Engine : E6 275 4VH

1st version kW : 202.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.90...12.00

Del. quantity cm³/ : 18.3...18.5
 100 s: (18.0...18.8)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.5...4.7
 Del. quantity cm³/ : 3.2...3.8
 100 s: (3.0...4.0)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40
 2nd speed rpm : 450
 travel mm : 2.80...3.10
 3rd speed rpm : 850
 travel mm : 6.20...6.40
 4th speed rpm : 1000
 travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1100
 Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 900

Del.quantity : 183.0...185.0
1000 : (180.0...188.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 10.90
Speed rpm : 900...910
2nd rack travel in: 4.00
Speed rpm : 1025...1055
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 6.40
Speed rpm : 325
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 11.90...12.90
2nd speed rpm : 700
Rack travel in m: 12.80...12.90
3rd speed rpm : 600
Rack travel in m: 13.00...13.10
4th speed rpm : 500
Rack travel in m: 0.00...12.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.00...13.10

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.30...10.50
2nd pressure hPa : 225
Rack travel in m: 11.00...11.10

3rd pressure hPa : 385
Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm3/ : 219.5...225.5
1000 s: (216.5...228.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 154.0...158.0
1000 s: (152.0...160.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.90
Speed rpm : 900...910

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 195.0...235.0
1000 s: (185.0...245.0)
Rack travel in mm : 10.30...10.50

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm3/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1a13
 Edition : 02.05.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 851
 Injection pump
 Pump designation : PES6P120A720RS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...850PA848-25
 K
 Governor no. : 0 421 815 208

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E6 275 4VH

1st version kW : 202.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del.quantity cm3/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 2.80...3.10

3rd speed rpm : 850
 travel mm : 6.20...6.40

4th speed rpm : 1000
 travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del.quantity : 183.0...185.0
1000 : (180.0...188.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 10.90
Speed rpm : 900...910
2nd rack travel in: 4.00
Speed rpm : 1025...1055
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 6.40
Speed rpm : 325
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 11.90...12.00
2nd speed rpm : 700
Rack travel in m: 12.80...12.90
3rd speed rpm : 600
Rack travel in m: 13.00...13.10
4th speed rpm : 500
Rack travel in m: 0.00...12.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.00...13.10

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.30...10.50
2nd pressure hPa : 225
Rack travel in m: 11.00...11.10

3rd pressure hPa : 385
Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm3/ : 219.5...225.5
1000 s: (216.5...228.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 154.0...158.0
1000 s: (152.0...160.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.90
Speed rpm : 900...910

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 195.0...235.0
1000 s: (185.0...245.0)
Rack travel in mm : 10.30...10.50

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm3/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1a14
 Edition : 02.05.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 852
 Injection pump
 Pump designation : PES6P120A720RS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...900PA909K
 Governor no. : 0 421 815 210

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E7-400

1st version kW : 298.0
 Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 15.80...15.90

Del.quantity cm3/ : 27.5...27.7

100 s: (27.2...28.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del.quantity cm3/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 2.80...3.20

3rd speed rpm : 650
 travel mm : 5.60...5.80

4th speed rpm : 900
 travel mm : 8.30...8.50

5th speed rpm : 1100
 travel mm : 10.30...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 275.0...277.0

1000 : (272.0...280.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 58...66

Testing:

1st rack travel in: 14.80

Speed rpm : 940...950

2nd rack travel in: 4.00

Speed rpm : 1120...1150

4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 7...15

Testing:

Speed rpm : 275

Minimum rack travel: 6.30

Speed rpm : 325

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 15.80...15.90

2nd speed rpm : 625

Rack travel in m: 15.20...15.30

3rd speed rpm : 700

Rack travel in m: 15.50...15.60

4th speed rpm : 500

Rack travel in m: 0.00...13.50

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 900

Pressure hPa : 1200

Rack travel mm : 15.80...15.90

Measurement

Speed 1/min : 900

1st pressure hPa : -

Rack travel in m: 8.10...8.50

2nd pressure hPa : 325

Rack travel in m: 10.20...10.30

3rd pressure hPa : 790

Rack travel in m: 13.80...14.20

START CUT-OUT

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 625

Del.quantity cm³/ : 302.5...308.5

1000 s: (299.5...311.5)

Spread cm³ : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400

Del.quantity cm³/ : 157.5...161.5

1000 s: (155.5...163.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.80

Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 180.0...220.0

1000 s: (170.0...230.0)

Rack travel in mm : 10.40...10.60

LOW IDLE

Speed rpm : 325

Rack travel in mm : 4.70...4.90

Del.quantity cm³/ : 40.0...46.0

1000 s: (38.0...48.0)

Spread cm³ : 8.00

1000 s: (12.00)

Remarks:

:

Delivery-valve spring pre-tension

3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,0 d 1
Edition : 08.05.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 855

Injection pump
Pump designation : PES6P120A720LS7161
EP type number : 0 412 726 817
Governor
Governor design. : RQ300/1050PA897
Governor no. : 0 421 801 452

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM447 A

1st version kW : 213.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm³/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.6

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 680

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:
1st rack travel in: 12.60
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:
Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 680
Rack travel mm : 14.10...14.30

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 12.30...12.50
2nd pressure hPa : 400
Rack travel in m: 13.20...13.40
3rd pressure hPa : 800
Rack travel in m: 14.20...14.30
4th pressure hPa : -
Rack travel in m: 11.50...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 193.0...195.0
1000 s: (190.0...198.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 750

E17

Del.quantity cm3/ : 218.0...222.0
1000 s: (215.0...225.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.60
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 9,5 a
Edition : 08.05.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 857

Injection pump
Pump designation : PES6P120A72ORS7177
EP type number : 0 412 726 823
Governor
Governor design. : RQ285/1100PA915
Governor no. : 0 421 801 478

Customer-spec. information
Customer : IVECO-FIAT

Engine : 8460.41.601

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.30...11.40

Del.quantity cm³/ : 18.8...19.0

100 s: (18.5...19.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 285.0

Rack travel in mm : 4.2...4.4

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 188.0...190.0

1000 : (185.0...193.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.30

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1230...1260

4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 285
Rack travel in mm : 4.3

Testing:

Speed rpm : 100
Minimum rack travel: 5.80
Speed rpm : 285
Rack travel in mm : 4.20...4.40

CONSTANT REGULATION

Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.30...11.40
2nd speed rpm : 600
Rack travel in m: 11.30...11.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.30...11.40

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.70...8.80
2nd pressure hPa : 320
Rack travel in m: 10.30...10.40
3rd pressure hPa : 270
Rack travel in m: 9.50...9.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 123.0...125.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.30
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 10,0 q
Edition : 07.02.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 775 801

Injection pump
Pump designation : PES5P120A720LS7172
EP type number : 0 412 725 805
Governor
Governor design. : RSV350...1050POA529
-2
Governor no. : 0 421 833 312

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM449 LA

1st version kW : 221.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 12.90...13.00

Del.quantity cm³/ : 22.9...23.2

100 s: (22.6...23.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.5...4.8

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Aneroid pressure h: 1500

Del.quantity : 229.0...232.0

1000 : (226.0...235.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 50...58

Testing:

1st rack travel in: 11.90
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 24...32
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 4.65
Speed rpm : 350
Rack travel in mm : 4.50...4.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1030
Rack travel in m: 12.90...13.00
2nd speed rpm : 750
Rack travel in m: 13.90...14.00
3rd speed rpm : 875
Rack travel in m: 13.50...13.70

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 750
Rack travel mm : 13.10...13.30

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 10.50...10.70
2nd pressure hPa : 500
Rack travel in m: 12.20...12.40
3rd pressure hPa : 1050
Rack travel in m: 13.30...13.50
4th pressure hPa : 1500
Rack travel in m: 13.90...14.10
5th pressure hPa : -
Rack travel in m: 9.50...9.90

FUEL DELIVERY CHARACTERISTICS

1st version

E21

Aneroid pressure h: 750
Speed rpm : 700
Del.quantity cm3/ : 235.0...238.0
1000 s: (232.0...241.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 750
Del.quantity cm3/ : 251.0...254.0
1000 s: (248.0...257.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 146.0...148.0
1000 s: (143.0...151.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 g
Edition : 29.03.89
Replaces : 12.9.86
Test oil : ISO-4113

Combination no. : 0 402 776 801

Injection pump
Pump designation : PES6P120A720LS7107-1
EP type number : 0 412 726 805
Governor
Governor design. : RSV350..0750POA520
Governor no. : 0 421 833 223

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM427 A

1st version kW : 184.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)

Rack travel in mm : 9.00...12.00

Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.50

Del.quantity cm³/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 23...31

Testing:

1st rack travel in: 12.40

Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 775...788
4th rack travel in: 1000
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 12...20
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.5
Speed rpm : 350
Rack travel in mm : 5.40...5.60

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 188.0...194.0
1000 s: (185.0...197.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

Speed rpm : 1130...1140

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...190.0
1000 s: (166.0...194.0)

Remarks:

:

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 c 3
 Edition : 29.03.89
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 776 806

Injection pump
 Pump designation : PES6P120A720LS7120
 EP type number : 0 412 726 803
 Governor
 Governor design. : RSV350..1050POA529-3
 Governor no. : 0 421 833 317

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM447 A

1st version kW : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 14.00...14.20

Del.quantity cm³/ : 20.2...20.4

100 s: (19.9...20.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 650

Del.quantity : 202.0...204.0

1000 : (199.0...207.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 48...56

Testing:

1st rack travel in: 12.20
Speed rpm : 1080...1090
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.7
Speed rpm : 350
Rack travel in mm : 5.60...5.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050
Rack travel in m: 13.20...13.30
2nd speed rpm : 950
Rack travel in m: 13.70...13.90
3rd speed rpm : 875
Rack travel in m: 14.20...14.40
4th speed rpm : 750
Rack travel in m: 14.70...14.90

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 600
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 13.00...13.20
2nd pressure hPa : 400
Rack travel in m: 13.90...14.10
3rd pressure hPa : 850
Rack travel in m: 15.00...15.20
4th pressure hPa : -
Rack travel in m: 11.40...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

E25

Aneroid pressure h: 1200
Speed rpm : 1030
Del.quantity cm3/ : 194.0...197.0
1000 s: (191.0...200.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 219.0...224.0
1000 s: (216.0...227.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1080...1090

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 D13
Edition : 07.02.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 436 102CA
Injection pump
Pump designation : PES6MM100/120RS1143
EP type number : 0 413 406 137
Governor
Governor design. : RGV350...1100MW78-2
Governor no. : 0 420 083 160

Cust. part no. : 3908567

Customer-spec. information
Customer : CUMMINS/US

Engine : 6 CTA-8.3
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.05...3.15
: (3.00...3.20)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 15.0...15.2

100 s: (14.8...15.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.3...7.5

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1240

travel mm : 8.80...9.20

2nd speed rpm : 1140

travel mm : 7.80...8.00

3rd speed rpm : 700

travel mm : 3.80...4.40

4th speed rpm : 350

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 150.0...152.0

1000 : (148.0...154.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever
position degrees: 44...52

Testing:
1st rack travel in: 11.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1230...1260
4th rack travel in: 1330
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 7.4

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 7.30...7.50

CONSTANT REGULATION
Speed rpm : 360...550

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.70...12.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.60...9.70
2nd pressure hPa : 230
Rack travel in m: 10.40...10.50
3rd pressure hPa : 490
Rack travel in m: 12.00...12.40

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 76.0...78.0
1000 s: (74.0...80.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 205.0...225.0
1000 s: (202.0...228.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark/lock = 8.0°
angular displacement of the cam after
start of delivery of cylinder 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 D 6
 Edition : 07.02.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 436 103EA
 Injection pump
 Pump designation : PES6MW100/120RS1143
 EP type number : 0 413 406 137
 Governor
 Governor design. : RQV350...1100MW82
 Governor no. : 0 420 083 130

Cust. part no. : 3915168

Customer-spec. information
 Customer : CUMMINS/US

Engine : 6 CTA-830

1st version kW : 186.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

E28

Test pressure, bar: 27...29

Prestroke mm : 3.05...3.15
 : (3.00...3.20)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 12.70...12.80
 Del.quantity cm3/ : 15.0...15.2
 100 s: (14.8...15.4)

Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 7.2...7.4
 Del.quantity cm3/ : 1.6...2.0
 100 s: (1.4...2.2)
 Spread cm3 : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1150
 travel mm : 8.20...8.40
 2nd speed rpm : 1250
 travel mm : 9.30...9.70
 3rd speed rpm : 350
 travel mm : 1.70...2.10
 4th speed rpm : 700
 travel mm : 4.10...4.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 900
 Del.quantity : 150.0...152.0
 1000 : (148.0...154.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 43...51

Testing:
1st rack travel in: 11.70
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1245...1275
4th rack travel in: 1330
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 7.3

Testing:
Speed rpm : 100
Minimum rack travel: 9.30
Speed rpm : 350
Rack travel in mm : 7.20...7.40

CONSTANT REGULATION
Speed rpm : 360...550

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.70...12.80
2nd speed rpm : 700
Rack travel in m: 13.60...13.70
3rd speed rpm : 900
Rack travel in m: 12.90...13.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.60...9.70

Measurement
Speed 1/min : 500

1st pressure hPa : 255
Rack travel in m: 10.60...10.70
2nd pressure hPa : 580
Rack travel in m: 12.20...12.60
3rd pressure hPa : 900
Rack travel in m: 13.60...13.70

START CUT-OUT

F01

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/ : 159.0...161.0
1000 s: (157.0...163.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 76.0...78.0
1000 s: (74.0...80.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 205.0...225.0
1000 s: (202.0...228.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.20...7.40
Del.quantity cm3/ : 16.0...20.0
1000 s: (14.0...22.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark/lock = 8.0°
angular displacement of the cam after
start of delivery of cylinder 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 F
Edition : 10.02.89
Replaces : 29.04.88
Test oil : ISO-4113

Combination no. : 0 403 436 105GA

Injection pump
Pump designation : PES6MW100/120RS1169
EP type number : 0 413 406 153
Governor
Governor design. : RQV350...1100MW78-1
Governor no. : 0 420 083 156

Cust. part no. : 3914828

Customer-spec. information
Customer : CUMMINS/US

Engine : 6 CTA-8.3
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 13.5...13.7

100 s: (13.3...13.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 1.2...1.6

100 s: (1.0...1.8)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.60...9.20

2nd speed rpm : 1250

travel mm : 7.60...7.80

3rd speed rpm : 800

travel mm : 4.90...5.50

4th speed rpm : 350

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 135.0...137.0

1000 : (133.0...139.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 44...52

Testing:

1st rack travel in: 11.40
Speed rpm : 1250...1260
2nd rack travel in: 4.00
Speed rpm : 1350...1380
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack travel: 7.70
Speed rpm : 350
Rack travel in mm : 6.00...6.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.40...11.50

Measurement

Speed 1/min : 500

1st pressure hPa : 320
Rack travel in m: 11.70...11.80
2nd pressure hPa : 400
Rack travel in m: 12.00...12.30
3rd pressure hPa : 900
Rack travel in m: 12.40...12.50

START CUT-OUT

Speed 1/min : 220 (230)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 800
Del.quantity cm³/ : 128.0...132.0
1000 s: (126.0...134.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500

F03

Del.quantity cm³/ : 108.0...110.0
1000 s: (106.0...112.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1250...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 222.0...232.0
1000 s: (219.0...235.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.00...6.20
Del.quantity cm³/ : 12.0...16.0
1000 s: (10.0...18.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 D10
Edition : 28.04.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 436 110
Injection pump
Pump designation : PES6MM100/120RS1143
EP type number : 0 413 406 137
Governor
Governor design. : RQV350...1100MW82-5
Governor no. : 0 420 083 177

Cust. part no. : 3913639

Customer spec. information
Customer : CUMMINS/US

Engine : 6 CTA

1st version kW : 179.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

FD4

Test pressure, bar: 30...32

Prestroke mm : 3.05...3.15
: (3.00...3.20)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Phasing :
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
Rack travel in mm : 11.60...11.70
Del. quantity cm3/ : 13.5...13.7
100 s : (13.3...13.9)
Spread cm3 : 0.3
100 s : (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 7.0...7.2
Del. quantity cm3/ : 1.6...2.0
100 s : (1.4...2.2)
Spread cm3 : 0.3
100 s : (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1240
travel mm : 8.80...9.20
2nd speed rpm : 1140
travel mm : 7.80...8.00
3rd speed rpm : 700
travel mm : 3.80...4.40
4th speed rpm : 350
travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h : 900
Del. quantity : 135.0...137.0
1000 : (133.0...139.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 43...51

Testing:
1st rack travel in: 10.60
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 9...17
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 7.1

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 7.00...7.20

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.60...11.70
2nd speed rpm : 700
Rack travel in m: 12.90...13.00
3rd speed rpm : 900
Rack travel in m: 12.40...12.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.00...10.10

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 11.10...11.20
2nd pressure hPa : 520
Rack travel in m: 12.30...12.60
3rd pressure hPa : 900
Rack travel in m: 12.90...13.00

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

F05

1st version
Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/ : 155.0...158.0
1000 s: (152.5...160.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 98.0...100.0
1000 s: (96.0...102.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 205.0...225.0
1000 s: (202.0...228.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.00...7.20
Del.quantity cm3/ : 16.0...20.0
1000 s: (14.0...22.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark 9° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 D12
 Edition : 07.04.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 436 111
 Injection pump
 Pump designation : PES6MW100/120RS1143
 EP type number : 0 413 406 137
 Governor
 Governor design. : RQV350...1200MW82-6
 Governor no. : 0 420 083 184

Cust. part no. : 3916000

Customer-spec. information
 Customer : CUMMINS/US

Engine : 6 CTA-830
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.15...3.25
 : (3.10...3.30)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 13.8...14.0

100 s: (13.6...14.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.1...7.2

Del.quantity cm3/ : 1.2...1.6

100 s: (1.0...1.8)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250
 travel mm : 7.60...7.80

2nd speed rpm : 1350
 travel mm : 8.60...9.00

3rd speed rpm : 350
 travel mm : 1.20...1.60

4th speed rpm : 800
 travel mm : 4.90...5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 138.0...140.0

1000 : (136.0...142.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 42...50

Testing:

1st rack travel in: 11.10
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1370...1400
4th rack travel in: 1455
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 11...19
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 7.1

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 7.10...7.20

CONSTANT REGULATION

Speed rpm : 360...500

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200
Rack travel in m: 12.10...12.20
2nd speed rpm : 750
Rack travel in m: 12.60...12.70
3rd speed rpm : 1000
Rack travel in m: 12.10...12.20
4th speed rpm : 900
Rack travel in m: 12.20...12.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : 390
Rack travel in m: 11.00...11.10
2nd pressure hPa : 480
Rack travel in m: 11.60...11.90
3rd pressure hPa : 700
Rack travel in m: 12.60...12.70

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm³/ : 139.0...142.0
1000 s: (136.5...144.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 100.0...102.0
1000 s: (98.0...104.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 205.0...225.0
1000 s: (202.0...228.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.10...7.20
Del.quantity cm³/ : 12.0...16.0
1000 s: (10.0...18.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 4,5 L
 Edition : 07.04.89
 Replaces : 12.09.86
 Test oil : ISO-4113

Combination no. : 0 403 444 111

Injection pump
 Pump designation : PES4MW100/320RS1116
 EP type number : 0 413 404 102
 Governor
 Governor design. : RQV300...1100MW39-5
 Governor no. : 0 420 083 068

Customer-spec. information
 Customer : VOLVO

Engine : TD45B

1st version kW : 85.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 173...176

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm³/ : 11.5...11.7

100 s: (11.3...11.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.5

Del.quantity cm³/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1225

travel mm : 9.40...9.80

2nd speed rpm : 1150

travel mm : 8.30...8.50

3rd speed rpm : 600

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.00...1.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 115.0...117.0

1000 : (113.0...119.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 12.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.4

Testing:

Speed rpm : 100
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 6.40...6.50

CONSTANT REGULATION

Speed rpm : 320...450

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1000
Del.quantity cm3/ : 115.5...118.5
1000 s: (113.0...121.0)
Spread cm3 : 5.50
1000 s: (7.0)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...160.0
1000 s: (147.0...163.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.50
Del.quantity cm3/ : 13.0...17.0
1000 s: (10.5...19.5)

Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 30
Edition : 30.09.88
Replaces : 24.07.87
Test oil : ISO-4113

Combination no. : 0 403 446 145

Injection pump
Pump designation : PES6MW100/72ORS1114-
1
EP type number : 0 413 406 111
Governor
Governor design. : RQV300...1300MW48
Governor no. : 0 420 083 066

Customer-spec. information
Customer : DB

Engine : OM366A

1st version kW : 125.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 7.7...7.9

100 s: (7.5...8.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...7.9

Del.quantity cm³/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del.quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 48...56

Testing:

1st rack travel in: 10.00
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1430...1460
4th rack travel in: 1520
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 14...22
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.8

Testing:

Speed rpm : 100
Minimum rack travel: 9.40
Speed rpm : 300
Rack travel in mm : 7.80...7.90
Rack travel in mm : 2.00
Speed rpm : 500...560

CONSTANT REGULATION

Speed rpm : 330...600

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1300
Rack travel in m: 11.00...11.10
2nd speed rpm : 700
Rack travel in m: 12.10...12.20
3rd speed rpm : 720
Rack travel in m: 12.10...12.20
4th speed rpm : 800
Rack travel in m: 11.80...12.00
5th speed rpm : 900
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm3/ : 74.5...77.5
1000 s: (72.0...80.0)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

F11

1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.80...7.90
Del.quantity cm3/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 N 6
Edition : 29.03.89
Replaces : 12.85
Test oil : ISO-4113

Combination no. : 0 403 446 166

Injection pump
Pump designation : PES6MM100/720RS1133
EP type number : 0 413 406 126
Governor
Governor design. : RQ325/1325MM65
Governor no. : 0 420 082 018

Customer-spec. information
Customer : KHD

Engine : BF 6L 913 BW

1st version kW : 124.0
Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1325

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 10.2...10.4

100 s: (10.0...10.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.0...7.1

Del.quantity cm3/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1460
travel mm : 8.60...9.20

2nd speed rpm : 1380
travel mm : 6.50...6.70

3rd speed rpm : 425
travel mm : 4.00...4.40

4th speed rpm : 300
travel mm : 2.00...2.40

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2

Speed rpm : 700

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1325

Aneroid pressure h: 800

Del.quantity : 102.0...104.0

1000 : (100.0...106.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 26...34

Setting point:
Speed rpm : 700
Rack travel in mm : 20.0

Testing:
1st rack travel in: 10.10
Speed rpm : 1370...1385
2nd rack travel in: 4.00
Speed rpm : 1440...1470
4th rack travel in: 1550
Speed rpm : 0.10...1.00

LOW IDLE 1
Control lever
position degrees: 8...16
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.0

Testing:
Speed rpm : 100
Minimum rack travel: 8.60
Speed rpm : 300
Rack travel in mm : 7.00...7.10

CONSTANT REGULATION
Speed rpm : 340...450

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 450
Rack travel mm : 10.50...10.60

Measurement
Speed 1/min : 500

1st pressure hPa : 800
Rack travel in m: 11.10...11.20
2nd pressure hPa : -
Rack travel in m: 9.40...9.50
3rd pressure hPa : 350
Rack travel in m: 9.90...10.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 850
Del.quantity cm3/ : 94.0...98.0
1000 s: (92.0...100.0)

Spread cm3 : 3.50
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 56.0...58.0
1000 s: (54.0...60.0)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1370...1385

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...140.0
1000 s: (117.0...143.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.00...7.10
Del.quantity cm3/ : 11.0...15.0
1000 s: (9.0...17.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 N 9
 Edition : 29.03.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 446 186
 Injection pump
 Pump designation : PES6MW100/720RS1133
 EP type number : 0 413 406 126
 Governor
 Governor design. : RQV325...1325MW79
 Governor no. : 0 420 083 123

Customer spec. information
 Customer : KHD

Engine : BF 6L 913

1st version kW : 124.0
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness : 6.00X2.00X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1325

Rack travel in mm : 10.50...10.60

Del. quantity cm³/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 6.8...6.9

Del. quantity cm³/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1375

travel mm : 8.70...8.90

2nd speed rpm : 1430

travel mm : 9.50...9.90

3rd speed rpm : 325

travel mm : 1.50...1.90

4th speed rpm : 600

travel mm : 2.70...3.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1400

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1325

Aneroid pressure h: 900

Del. quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:

1st rack travel in: 9.50
Speed rpm : 1370...1380
2nd rack travel in: 4.00
Speed rpm : 1445...1475
4th rack travel in: 1550
Speed rpm : 0.10...1.00

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.8

Testing:

Speed rpm : 100
Minimum rack travel: 8.60
Speed rpm : 325
Rack travel in mm : 6.80...6.90

CONSTANT REGULATION

Speed rpm : 350...650

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 450
Rack travel mm : 9.90...10.00

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.00
2nd pressure hPa : 350
Rack travel in m: 9.30...9.60
3rd pressure hPa : 900
Rack travel in m: 10.50...10.60

START CUT-OUT

Speed 1/min : 245 (255)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 850
Del.quantity cm3/ : 93.0...97.0
1000 s: (91.0...99.0)

Spread cm3 : 3.50
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 57.0...59.0
1000 s: (55.0...61.0)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1370...1380

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.80...6.90
Del.quantity cm3/ : 11.0...15.0
1000 s: (9.0...17.0)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 T
Edition : 28.04.89
Replaces : 09.12.88
Test oil : ISO-4113

Combination no. : 0 403 446 198

Injection pump
Pump designation : PES6MW100/320RS1160
EP type number : 0 413 406 147
Governor
Governor design. : RQV350...1200MW46-16
Governor no. : 0 420 083 147

Customer-spec. information
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 176.4
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 016

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
: (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.30...12.40

Del. quantity cm3/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.5...6.6

Del. quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.30...8.50

2nd speed rpm : 1460

travel mm : 9.10...9.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 800

Del. quantity : 118.0...120.0

1000 : (116.0...122.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 44...49

Testing:
1st rack travel in: 11.30
Speed rpm : 1260...1280
2nd rack travel in: 4.00
Speed rpm : 1385...1395
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 12...20
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.5

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 6.50...6.60

CONSTANT REGULATION
Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 800
Pressure hPa : 180
Rack travel mm : 10.30...10.40

Measurement
Speed 1/min : 800

1st pressure hPa : -
Rack travel in m: 10.00...10.10
2nd pressure hPa : 480
Rack travel in m: 11.80...12.10
3rd pressure hPa : 800
Rack travel in m: 12.30...12.40

START CUT-OUT

Speed 1/min : 180 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 1200
Del.quantity cm³/ : 120.0...124.0
1000 s: (118.0...126.0)
Spread cm³ : 6.50
1000 s: (7.0)
Aneroid pressure h: -

F17

Speed rpm : 800
Del.quantity cm³/ : 80.0...82.0
1000 s: (78.0...84.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1260...1280

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...180.0
1000 s: (137.0...183.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.50...6.60
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose
with restriction of 1.2 mm diameter.

Before checking sleeve position,
first adjust latching.

In unlatched condition, do not
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 6,2 D
Edition : 14.04.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 446 218

Injection pump
Pump designation : PES6MW100/320RS1179
EP type number : 0 413 406 161
Governor
Governor design. : RGV275...1175MW80-2
Governor no. : 0 420 083 180

Customer-spec. information
Customer : RVI

Engine : MIDR 060226K

1st version kW : 160.0
Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 033

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)
Rack travel in mm : 16.50...19.50

F18

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1175

Del.quantity cm3/ : 13.0...13.2
100 s: (12.8...13.4)

Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 275.0
Rack travel in mm : 7.5...7.7
Del.quantity cm3/ : 2.8...3.2
100 s: (2.5...3.4)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1375
travel mm : 8.60...9.00
2nd speed rpm : 1225
travel mm : 7.60...7.80
3rd speed rpm : 500
travel mm : 3.20...3.80
4th speed rpm : 275
travel mm : 1.30...1.70

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1360
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1175
Aneroid pressure h: 1000
Del.quantity : 130.0...132.0
1000 : (128.0...134.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 47...55

Testing:

1st rack travel in: 12.40
Speed rpm : 1260...1270
2nd rack travel in: 4.00
Speed rpm : 1430...1470
4th rack travel in: 1550
Speed rpm : 1.00...0.00

LOW IDLE 1

Control lever
position degrees: 12...20
Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 7.6

Testing:

Speed rpm : 100
Minimum rack travel: 7.40
Speed rpm : 275
Rack travel in mm : 5.70...5.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.20
2nd pressure hPa : 160
Rack travel in m: 10.80...10.90
3rd pressure hPa : 480
Rack travel in m: 12.60...12.90

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 700
Del.quantity cm³/ : 126.5...129.5
1000 s: (124.0...132.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 53.0...55.0
1000 s: (51.0...57.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 98.0...112.0
1000 s: (95.0...115.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.70...5.90
Del.quantity cm³/ : 28.0...32.0
1000 s: (25.5...34.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 62
 Edition : 29.03.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 446 222
 Injection pump
 Pump designation : PES6MM100/720RS1131
 EP type number : 0 413 406 123
 Governor
 Governor design. : RQV300...1300MM62-2
 Governor no. : 0 420 083 186

Customer-spec. information
 Customer : DB-NKW

Engine : OM 366 LA

1st version kW : 150.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 715 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.75)

Rack travel in mm : 9.00...12.00

F20

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.60...11.70

Del.quantity cm³/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 51...59

Testing:

1st rack travel in: 10.60
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1440...1470
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 14...22
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.00...6.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 170
Rack travel mm : 10.10...10.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...9.90
2nd pressure hPa : 225
Rack travel in m: 11.20...11.50
3rd pressure hPa : 700
Rack travel in m: 11.60...11.70

START CUT-OUT

Speed 1/min : 200 (230)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm3/ : 82.5...85.5
1000 s: (80.0...88.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 52.0...54.0
1000 s: (50.0...56.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 83.0...93.0
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PB 6,0 D 67
 Edition : 14.04.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 446 224
 Injection pump
 Pump designation : PES6MW100/72ORS1172
 EP type number : 0 413 406 155
 Governor
 Governor design. : RQV300...1300MW67-2
 Governor no. : 0 420 083 189

Customer-spec. information
 Customer : DB-NKW

Engine : OM 366 LA

1st version kW : 170.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 19.00...21.00

F22

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 10.5...10.7

100 s: (10.3...10.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1460

travel mm : 9.70...10.10

2nd speed rpm : 1360

travel mm : 8.30...8.50

3rd speed rpm : 600

travel mm : 3.50...4.10

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 105.0...107.0

1000 : (103.0...109.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:

1st rack travel in: 13.40
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1430...1460
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 100
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.80...6.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : 450
Rack travel in m: 12.40...12.50
2nd pressure hPa : 550
Rack travel in m: 13.30...13.50
3rd pressure hPa : 1000
Rack travel in m: 14.40...14.50

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm³/ : 92.0...95.0
1000 s: (89.5...97.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 42.0...44.0
1000 s: (40.0...46.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...100.0
1000 s: (87.0...103.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.80...6.00
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 69
 Edition : 21.04.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 446 225
 Injection pump
 Pump designation : PES6MW100/720RS1144-1
 EP type number : 0 413 406 159
 Governor
 Governor design. : RQV300...1400MW48-11
 Governor no. : 0 420 083 190

Customer-spec. information
 Customer : DB-NKW

Engine : OM366A

1st version kW : 125.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...8.0

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1550

travel mm : 9.20...9.60

2nd speed rpm : 1450

travel mm : 8.30...8.50

3rd speed rpm : 550

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.00...1.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1450

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 48...56

Testing:
1st rack travel in: 9.90
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1530...1560
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.9

Testing:
Speed rpm : 100
Minimum rack travel: 9.50
Speed rpm : 300
Rack travel in mm : 7.80...8.00

TORQUE CONTROL
Dimension a mm : 0.60
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 10.90...11.00
2nd speed rpm : 800
Rack travel in m: 11.50...11.60
3rd speed rpm : 1000
Rack travel in m: 11.10...11.30

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 800
Del.quantity cm3/ : 67.5...70.5
1000 s: (65.0...73.0)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.90
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

F25

Speed rpm : 100
Del.quantity cm3/ : 80.0...90.0
1000 s: (77.0...93.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.80...8.00
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,2 L 1
Edition : 28.11.88
Replaces : 27.10.88
Test oil : ISO-4113

Combination no. : 0 403 456 101

Injection pump
Pump designation : PES6MW100/321RS1153
EP type number : 0 413 406 145
Governor
Governor design. : RQ250/1300MW84
Governor no. : 0 420 082 029

Customer-spec. information
Customer : MAN

Engine : D 0826 LF

1st version kW : 165.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.50...11.60

Del.quantity cm³/ : 13.3...13.5

100 s: (13.1...13.7)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 4.9...5.1

Del.quantity cm³/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1440

travel mm : 8.70...9.10

2nd speed rpm : 1360

travel mm : 6.30...6.50

3rd speed rpm : 380

travel mm : 4.10...4.70

4th speed rpm : 250

travel mm : 1.50...1.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 133.0...135.0

1000 : (131.0...137.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 26...34

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.50
Speed rpm : 1345...1360
2nd rack travel in: 4.00
Speed rpm : 1440...1460
4th rack travel in: 1530
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 6...14
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 250
Rack travel in mm : 4.90...5.10

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 180
Rack travel mm : 9.40...9.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.20
2nd pressure hPa : 385
Rack travel in m: 10.70...11.00
3rd pressure hPa : 1000
Rack travel in m: 11.50...11.60

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

F27

Speed rpm : 600
Del.quantity cm3/ : 129.0...132.0
1000 s: (126.5...134.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 1000
Speed rpm : 800
Del.quantity cm3/ : 131.0...134.0
1000 s: (128.5...136.5)
Aneroid pressure h: 1000
Speed rpm : 1300
Del.quantity cm3/ : 132.5...135.5
1000 s: (130.0...138.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 74.0...76.0
1000 s: (72.0...78.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.90...5.10
Del.quantity cm3/ : 18.0...22.0
1000 s: (15.5...24.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Note remarks

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

```
1st version
Speed      rpm   : 800
Aneroid pressure h: 1000
Del.quantity 1000 : (132.0...134.0)
              : (130.0...136.0)
```

Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control Lever
position degrees: 54...62

Testing:

1st rack travel in: 10.40
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 250
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 310...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 220
Rack travel mm : 9.10...9.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.80...8.90
2nd pressure hPa : 480
Rack travel in m: 10.70...11.00
3rd pressure hPa : 1000
Rack travel in m: 11.40...11.50

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 129.0...132.0
1000 s: (126.5...134.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 1000
Speed rpm : 1100
Del.quantity cm3/ : 131.5...134.5
1000 s: (129.0...137.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 74.0...76.0
1000 s: (72.0...78.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.40
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 19.0...23.0
1000 s: (16.5...25.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,2 0
Edition : 07.04.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 456 104
Injection pump
Pump designation : PES6MW100/321RS1180
EP type number : 0 413 406 163
Governor
Governor design. : RQ250/1300MW84-1
Governor no. : 0 420 082 037

Customer-spec. information
Customer : MAN

Engine : D 0826 LUH

1st version kW : 157.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 11.60...11.70
Del.quantity cm3/ : 12.6...12.8
100 s: (12.4...13.0)
Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 250.0
Rack travel in mm : 5.2...5.4
Del.quantity cm3/ : 1.8...2.2
100 s: (1.5...2.4)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1320
travel mm : 8.60...9.00
2nd speed rpm : 1260
travel mm : 6.50...6.70
3rd speed rpm : 350
travel mm : 3.40...4.00
4th speed rpm : 250
travel mm : 1.50...2.10

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 1000
Del.quantity : 126.0...128.0
1000 : (124.0...130.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 26...34

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.60
Speed rpm : 1245...1260
2nd rack travel in: 4.00
Speed rpm : 1305...1335
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 6...14
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 7.30
Speed rpm : 250
Rack travel in mm : 5.20...5.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 200
Rack travel mm : 9.60...9.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.40
2nd pressure hPa : 400
Rack travel in m: 10.90...11.20
3rd pressure hPa : 1000
Rack travel in m: 11.60...11.70

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

G03

Speed rpm : 600
Del.quantity cm3/ : 123.0...126.0
1000 s: (120.5...128.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: 1000
Speed rpm : 800
Del.quantity cm3/ : 125.5...128.5
1000 s: (123.0...131.0)
Aneroid pressure h: 1000
Speed rpm : 1200
Del.quantity cm3/ : 125.5...128.5
1000 s: (123.0...131.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 74.0...76.0
1000 s: (72.0...78.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 18.0...22.0
1000 s: (15.5...24.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 C
Edition : 07.02.89
Replaces : 06.04.88
Test oil : ISO-4113

Combination no. : 0 403 466 101

Injection pump
Pump designation : PES6MW100/120RS1137
EP type number : 0 413 406 131
Governor
Governor design. : RSV400...1250MW2A319
Governor no. : 0 420 085 059

Customer-spec. information
Customer : CUMMINS/US

Engine : 6 CTA-8.3 L

1st version kW : 188.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 14.4...14.6

100 s: (14.2...14.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 7.9...8.0

Del.quantity cm3/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 144.5...146.5

1000 : (142.5...148.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 50...58

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.00
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1380...1410
4th rack travel in: 1450
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 7.9

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 7.90...8.00

SET IDLE AUXILIARY SPRING
Rack travel in mm : 4.00

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 750
Del.quantity cm3/ : 139.0...142.0
1000 s: (136.5...144.5)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...145.0
1000 s: (122.0...148.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 7.90...8.00
Del.quantity cm3/ : 19.0...23.0
1000 s: (16.5...25.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

G05

:
Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Starting/full-load transition speed
from holding magnet = 500 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 C 5
 Edition : 07.02.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 466 101BA
 Injection pump
 Pump designation : PES6MW100/120RS1137
 EP type number : 0 413 406 131
 Governor
 Governor design. : RSV400...1250MW2A319
 Governor no. : 0 420 085 059

Cust. part no. : 3811546

Customer-spec. information
 Customer : CUMMINS/US

Engine : 6 CTA

1st version kW : 186.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

G06

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250
 Rack travel in mm : 14.00...14.10
 Del.quantity cm3/ : 14.4...14.6
 100 s: (14.2...14.8)
 Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 500.0
 Rack travel in mm : 7.9...8.1
 Del.quantity cm3/ : 1.9...2.3
 100 s: (1.6...2.5)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Del.quantity : 144.5...146.5
 1000 : (142.5...148.5)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 50...58

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.00
Speed rpm : 1285...1295
2nd rack travel in: 4.00
Speed rpm : 1370...1400
4th rack travel in: 1450
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 500
Rack travel in mm : 8.0

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 500
Rack travel in mm : 7.90...8.10

SET IDLE AUXILIARY SPRING

Rack travel in mm : 4.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1285...1295

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...145.0
1000 s: (122.0...148.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 500
Rack travel in mm : 7.90...8.10
Del.quantity cm3/ : 19.0...23.0
1000 s: (16.5...25.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Starting/full-load transition speed
from holding magnet = 500 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 E 1
 Edition : 07.02.89
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 403 466 107DA

Injection pump
 Pump designation : PES6MW100/120RS1148
 EP type number : 0 413 406 143
 Governor
 Governor design. : RSV400...900MW7A319-5
 Governor no. : 0 420 085 082

Cust. part no. : 3909342

Customer-spec. information
 Customer : CUMMINS/US

Engine : 6 CTA

1st version kW : 171.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70
 : (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 17.9...18.1

100 s: (17.7...18.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.9...6.0

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 750

Del.quantity : 179.0...181.0

1000 : (177.0...183.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 47...55

Setting point:
 Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.00

Speed rpm : 790...800

2nd rack travel in: 4.00

Speed rpm : 825...855

4th rack travel in: 1000

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 18...26

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 5.9

Testing:

Speed rpm : 100

Minimum rack travel: 19.00

Speed rpm : 400

Rack travel in mm : 5.90...6.00

SET IDLE AUXILIARY SPRING

Rack travel in mm : 4.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 790...800

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 125.0...145.0

1000 s: (122.0...148.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.90...6.00

Del.quantity cm³/ : 16.0...20.0

1000 s: (13.5...22.5)

Spread cm³ : 3.50

1000 s: (5.50)

Remarks:

:

Start-of-delivery mark 9° cam angle
after start of delivery cyl. 1.

Starting/full-load transition speed

G09

from holding magnet = 500 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 C11
 Edition : 07.02.89
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 403 466 110

Injection pump
 Pump designation : PES6MW100/120RS1137
 EP type number : 0 413 406 131
 Governor
 Governor design. : RSV500...1250MW2A319
 -6
 Governor no. : 0 420 085 102

Cust. part no. : 3915688

Customer-spec. information
 Customer : CUMMINS/US

Engine : 6 CTA-8.3 L

1st version kW : 171.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.80...12.90

Del.quantity cm³/ : 13.4...13.6
 100 s: (13.2...13.8)

Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 500.0
 Rack travel in mm : 6.5...6.7
 Del.quantity cm³/ : 1.6...2.0
 100 s: (1.3...2.2)

Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Del.quantity : 134.0...136.0
 1000 : (132.0...138.0)

Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 50...58

Setting point:

Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.80
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1380...1410
4th rack travel in: 1550
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 23...31
Setting point w/out bumper spring
Speed rpm : 500
Rack travel in mm : 6.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 500
Rack travel in mm : 6.50...6.70

SET IDLE AUXILIARY SPRING

Rack travel in mm : 4.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm3/ : 126.5...129.5
1000 s: (124.0...132.0)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...145.0
1000 s: (122.0...148.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 500
Rack travel in mm : 6.50...6.70

G11

Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 C 7
 Edition : 07.02.89
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 403 466 111

Injection pump
 Pump designation : PES6MM100/120RS1137
 EP type number : 0 413 406 131
 Governor
 Governor design. : RSV400...1250MW2A319
 -7
 Governor no. : 0 420 085 103

Cust. part no. : 3915969

Customer-spec. information
 Customer : CUMMINS/US

Engine : 6 CTA-8.3 L

1st version kW : 188.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 14.4...14.6

100 s: (14.2...14.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250

Del.quantity : 144.5...146.5

1000 : (142.5...148.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 50...58

Setting point:
Speed rpm : 800
Rack travel in mm : 0.6

Testing:
1st rack travel in: 13.00
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1380...1410
4th rack travel in: 1450
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 8.0

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 7.90...8.10

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 750
Del. quantity cm³/ : 139.0...142.0
1000 s: (136.5...144.5)
Spread cm³ : 5.00
1000 s: (7.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 125.0...145.0
1000 s: (122.0...148.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 7.90...8.10
Del. quantity cm³/ : 19.0...23.0
1000 s: (16.5...25.5)

Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:
Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Starting/full-load transition speed
from holding magnet = 500 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 C10
Edition : 22.12.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 466 112

Injection pump
Pump designation : PES6MW100/120RS1137
EP type number : 0 413 406 131
Governor
Governor design. : RSV425...1100MW2A319
-8

Governer no. : 0 420 085 104

Cust. part no. : 3915970

Customer-spec. information
Customer : CUMMINS/US

Engine : 6 CTA-8.3 L

1st version kW : 188.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.10...14.20

Del.quantity cm3/ : 14.2...14.4

100 s: (14.0...14.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 7.7...7.9

Del.quantity cm3/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 142.0...144.0

1000 : (140.0...146.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.10

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1215...1245

4th rack travel in: 1300

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 18...26

Setting point w/out bumper spring

Speed rpm : 425

Rack travel in mm : 7.8

Testing:

Speed rpm : 100

Minimum rack travel: 19.00

Speed rpm : 425

Rack travel in mm : 7.70...7.90

SET IDLE AUXILIARY SPRING

Rack travel in mm : 4.00

TORQUE CONTROL

Dimension a mm : 0.60

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 14.10...14.20

2nd speed rpm : 750

Rack travel in m: 14.70...14.80

3rd speed rpm : 900

Rack travel in m: 14.30...14.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm3/ : 148.5...151.5

1000 s: (146.0...154.0)

Spread cm3 : 5.00

1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 125.0...145.0

1000 s: (122.0...148.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 425

Rack travel in mm : 7.70...7.90

Del.quantity cm3/ : 19.0...23.0

1000 s: (16.5...25.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

:
Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

Starting/full-load transition speed
from holding magnet = 500 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 H 2
 Edition : 07.02.89
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 403 466 113

Injection pump
 Pump designation : PES6MW100/120RS1137-1
 EP type number : 0 413 406 157
 Governor
 Governor design. : RSV450...1100MW2A319-13
 Governor no. : 0 420 085 114

Cust. part no. : 3195686

Customer-spec. information
 Customer : CUMMINS/US

Engine : 6 CTA
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 9 410 270 183

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 15.0...15.2

100 s: (14.8...15.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 450.0
 Rack travel in mm : 6.9...7.1
 Del.quantity cm³/ : 1.6...2.0
 100 s: (1.3...2.2)

Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 750
 Del.quantity : 150.5...152.5
 1000 : (148.5...154.5)

Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 42...50

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.90
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1370
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 7.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 450
Rack travel in mm : 6.90...7.10

SET IDLE AUXILIARY SPRING

Rack travel in mm : 4.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 750
Rack travel in m: 14.00...14.10
2nd speed rpm : 1100
Rack travel in m: 12.50...12.70
3rd speed rpm : 950
Rack travel in m: 13.20...13.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100
Del.quantity cm³/ : 130.5...133.5
1000 s: (128.0...136.0)
Spread cm³ : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...145.0
1000 s: (122.0...148.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 450
Rack travel in mm : 6.90...7.10
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Starting/full-load transition speed
from holding magnet = 500 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 C 8
 Edition : 07.02.89
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 403 466 115

Injection pump
 Pump designation : PES6MW100/120RS1137
 EP type number : 0 413 406 131
 Governor
 Governor design. : RSV400...1050MW2A319
 -11
 Governor no. : 0 420 085 107

Cust. part no. : 3915972

Customer-spec. information
 Customer : CUMMINS/US

Engine : 6 CTA

1st version kW : 165.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.20...14.30

Del.quantity cm3/ : 15.1...15.3

100 s: (14.9...15.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 7.3...7.5

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 750

Del.quantity : 151.0...153.0

1000 : (149.0...155.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 41...49

Setting point:

Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.10
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1320
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 7.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 490...560

SET IDLE AUXILIARY SPRING

Rack travel in mm : 4.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 750
Rack travel in m: 14.20...14.30
2nd speed rpm : 1050
Rack travel in m: 12.20...12.40
3rd speed rpm : 950
Rack travel in m: 13.00...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1050
Del.quantity cm3/ : 123.5...126.5
1000 s: (121.0...129.0)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...145.0
1000 s: (122.0...148.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

Starting/full-load transition speed
from holding magnet = 500 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 E 2
 Edition : 07.02.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 466 116
 Injection pump
 Pump designation : PES6MM100/12ORS1148
 EP type number : 0 413 406 143
 Governor
 Governor design. : RSV400...900MW7A319-12
 Governor no. : 0 420 085 108
 Cust. part no. : 3914871

Customer-spec. information
 Customer : CUMMINS/US

Engine : 6 CTA
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

G20

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 18.3...18.5

100 s: (18.1...18.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 6.2...6.4

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 183.0...185.0

1000 : (181.0...187.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 55...63

Setting point:

Speed rpm : 800
Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.50

Speed rpm : 940...950

2nd rack travel in: 4.00

Speed rpm : 960...990

4th rack travel in: 1125

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 25...33

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 6.3

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 400

Rack travel in mm : 6.20...6.40

Rack travel in mm : 2.00

Speed rpm : 430...490

SET IDLE AUXILIARY SPRING

Rack travel in mm : 4.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm3/ : 181.0...185.0

1000 s: (179.0...187.0)

Spread cm3 : 5.00

1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 125.0...145.0

1000 s: (122.0...148.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 6.20...6.40

Del.quantity cm3/ : 16.0...20.0

1000 s: (13.5...22.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

:

Start-of-delivery mark 9° cam angle
after start of delivery cyl. 1.

Starting/full-load transition speed
from holding magnet = 500 1/min.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 A 28
Edition : 24.02.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 474 002

Injection pump
Pump designation : PES4MW100/720RS1127
EP type number : 0 413 404 103
Governor
Governor design. : RSV350...1200MW0A330
Governor no. : 0 420 085 101

Customer-spec. information
Customer : DB

Engine : OM364A

1st version kW : 66.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.30...11.40

Del.quantity cm³/ : 7.1...7.3

100 s: (6.9...7.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.0...7.6

Del.quantity cm³/ : 0.9...1.1

100 s: (0.5...1.4)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 71.0...73.0

1000 : (69.0...75.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.30

Speed rpm : 1240...1245

2nd rack travel in: 4.00
Speed rpm : 1283...1296
3rd rack travel in: 4.00
Speed rpm : 1320...1350
4th rack travel in: 1450
Speed rpm : 0.30...1.70
5th rack travel in: 1240...1255
Speed rpm : 10.30

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 7.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 7.00...7.60
Rack travel in mm : 2.00
Speed rpm : 415...475

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 11.30...11.40
2nd speed rpm : 600
Rack travel in m: 12.10...12.20
3rd speed rpm : 900
Rack travel in m: 11.70...11.80
4th speed rpm : 950
Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 58.0...60.0
1000 s: (56.0...62.0)
Speed rpm : 900
Del.quantity cm3/ : 73.0...75.0
1000 s: (71.0...77.0)
Spread cm3 : 5.00
1000 s: (7.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 83.0...93.0
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.00...7.60
Del.quantity cm3/ : 9.0...11.0
1000 s: (5.5...14.5)

Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 A 24
 Edition : 07.02.89
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 403 474 005

Injection pump
 Pump designation : PES4MM100/72ORS1127
 EP type number : 0 413 404 103
 Governor
 Governor design. : RSV350...750MWOA318-4
 Governor no. : 0 420 085 089

Customer-spec. information
 Customer : DB

Engine : OM364A

1st version kW : 63.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.80...13.90

Del.quantity cm³/ : 9.5...9.7

100 s: (9.3...9.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.5...7.7

Del.quantity cm³/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 95.0...97.0

1000 : (93.0...99.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.80
 Speed rpm : 750...755

2nd rack travel in: 4.00
 Speed rpm : 780...793

4th rack travel in: 950
 Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 11...19

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 7.5

Speed rpm : 350

Rack travel in mm : 7.50...7.60

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 90.0...100.0

1000 s: (87.0...103.0)

LOW IDLE

Speed rpm : 350

Rack travel in mm : 7.50...7.70

Del.quantity cm3/ : 9.0...13.0

1000 s: (7.0...15.0)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 4,5 M
 Edition : 07.04.89
 Replaces : 18.10.88
 Test oil : ISO-4113

Combination no. : 0 403 474 007

Injection pump
 Pump designation : PES4MM100/32ORS1175
 EP type number : 0 413 404 105
 Governor
 Governor design. : RSV300...1000MW1A315
 -1
 Governor no. : 0 420 085 099

Customer-spec. information
 Customer : VOLVO-BM

Engine : TD45

1st version kW : 84.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 11.0...11.2
 100 s: (10.8...11.4)

Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 8.2...8.4
 Del.quantity cm3/ : 1.3...1.7
 100 s: (1.0...1.9)

Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del.quantity : 110.0...112.0
 1000 : (108.0...114.0)

Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 50...58

Setting point:

Speed rpm : 800
 Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.70
 Speed rpm : 1040...1050
 2nd rack travel in: 4.00
 Speed rpm : 1070...1100

3rd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1200
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.7

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 300
Rack travel in mm : 7.60...7.80

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 1000
Del.quantity cm3/ : 111.5...114.5
1000 s: (109.0...117.0)
Spread cm3 : 5.50
1000 s: (7.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 8.20...8.40
Del.quantity cm3/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 63
 Edition : 03.03.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 027
 Injection pump
 Pump designation : PES6MW100/72ORS1144
 EP type number : 0 413 406 138
 Governor
 Governor design. : RSV350...1300MWOA316
 -6
 Governor no. : 0 420 085 098
 Customer-spec. information
 Customer : DB

Engine : OM366A

1st version kW : 125.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300
 Rack travel in mm : 10.70...10.80
 Del.quantity cm3/ : 7.2...7.4
 100 s: (7.0...7.6)
 Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 7.0...7.6
 Del.quantity cm3/ : 0.9...1.1
 100 s: (0.7...1.3)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1300
 Del.quantity : 72.0...74.0
 1000 : (70.0...76.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 56...64

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:
 1st rack travel in: 9.70

Speed rpm : 1340...1345
2nd rack travel in: 4.00
Speed rpm : 1380...1393
3rd rack travel in: 4.00
Speed rpm : 1400...1430
4th rack travel in: 1450
Speed rpm : 0.30...1.70
5th rack travel in: 1345...1360
Speed rpm : 9.70

LOW IDLE 1

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 7.00...7.60
Rack travel in mm : 2.00
Speed rpm : 445...505

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1300
Rack travel in m: 10.70...10.80
2nd speed rpm : 700
Rack travel in m: 12.30...12.40
3rd speed rpm : 825
Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm3/ : 69.0...71.0
1000 s: (67.0...73.0)
Spread cm3 : 5.00
1000 s: (7.0)
Speed rpm : 825
Del.quantity cm3/ : 73.0...75.0
1000 s: (71.0...77.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1340...1345

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

H01

Speed rpm : 350
Rack travel in mm : 7.00...7.60
Del.quantity cm3/ : 9.0...11.0
1000 s: (7.0...13.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 31
Edition : 05.02.88
Replaces : 02.11.87
Test oil : ISO-4113

Combination no. : 0 403 476 054

Injection pump
Pump designation : PES6MW100/720RS1144
EP type number : 0 413 406 138
Governor
Governor design. : RSV350...1200MW1A316
-2
Governor no. : 0 420 085 076

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM366A

1st version kW : 115.0
Rated speed : 2400
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.60...9.70

Del.quantity cm³/ : 6.0...6.2

100 s: (5.8...6.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 6.30...6.90
Del.quantity cm³/ : 0.9...1.1
100 s: (0.6...1.4)
Spread cm³ : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 15.0

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 60.0...62.0

1000 : (58.0...64.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 58...66

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 8.60
Speed rpm : 1240...1245
2nd rack travel in: 4.00
Speed rpm : 1263...1276
3rd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 1450
Speed rpm : 0.30...1.70
5th rack travel in: 1240...1255
Speed rpm : 8.60

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 6.30...6.90
Rack travel in mm : 2.00
Speed rpm : 415...475

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200
Rack travel in m: 9.60...9.70
2nd speed rpm : 800
Rack travel in m: 10.50...10.60
3rd speed rpm : 950
Rack travel in m: 9.90...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm3/ : 59.0...61.0
1000 s: (57.0...63.0)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.60
Speed rpm : 1240...1245

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 19.00...21.00

H03

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.30...6.90
Del.quantity cm3/ : 9.0...11.0
1000 s: (6.0...14.0)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 46
Edition : 03.03.89
Replaces : 12.08.88
Test oil : ISO-4113

Combination no. : 0 403 476 055

Injection pump
Pump designation : PES6MW100/720RS1144
EP type number : 0 413 406 138
Governor
Governor design. : RSV350...1200MW1A316
-8
Governor no. : 0 420 085 097

Customer-spec. information
Customer : DB

Engine : OM366A

1st version kW : 92.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

H04

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.80...9.90

Del.quantity cm3/ : 6.2...6.4

100 s: (6.0...6.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.3...6.9

Del.quantity cm3/ : 0.9...1.1

100 s: (0.6...1.4)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 15.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 62.0...64.0

1000 : (60.0...66.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 8.80

Speed rpm : 1235...1240
2nd rack travel in: 4.00
Speed rpm : 1270...1283
3rd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1450
Speed rpm : 0.30...1.70
5th rack travel in: 1245...1260
Speed rpm : 8.80

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 6.6

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 350

Rack travel in mm : 6.30...6.90

Rack travel in mm : 2.00

Speed rpm : 415...475

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 9.80...9.90

2nd speed rpm : 800

Rack travel in m: 10.70...10.80

3rd speed rpm : 950

Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800

Del.quantity cm3/ : 61.0...63.0

1000 s: (59.0...65.0)

Spread cm3 : 5.00

1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.80

Speed rpm : 1235...1240

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

LOW IDLE

H05

Speed rpm : 350
Rack travel in mm : 6.30...6.90
Del.quantity cm3/ : 9.0...11.0
1000 s: (6.0...14.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 37
 Edition : 03.03.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 056
 Injection pump
 Pump designation : PES6MW100/720RS1144
 EP type number : 0 413 406 138
 Governor
 Governor design. : RSV350...1200MWOA316
 -5
 Governor no. : 0 420 085 090

Customer-spec. information
 Customer : DB

Engine : OM366A

1st version kW : 100.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.20...10.30

Del.quantity cm³/ : 6.9...7.1

100 s: (6.7...7.3)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.1...6.7

Del.quantity cm³/ : 0.9...1.1

100 s: (0.6...1.4)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 69.0...71.0

1000 : (67.0...73.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 58...66

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.20

Speed rpm : 1240...1245

2nd rack travel in: 4.00

Speed rpm : 1280...1293

3rd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1450
Speed rpm : 0.30...1.70
5th rack travel in: 1240...1255
Speed rpm : 9.20

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.4

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 6.10...6.70
Rack travel in mm : 2.00
Speed rpm : 415...475

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200
Rack travel in m: 10.20...10.30
2nd speed rpm : 800
Rack travel in m: 11.10...11.20
3rd speed rpm : 900
Rack travel in m: 11.00...11.20
4th speed rpm : 1050
Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm3/ : 69.0...71.0
1000 s: (67.0...73.0)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20
Speed rpm : 1240...1245

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

H07

Speed rpm : 350
Rack travel in mm : 6.10...6.70
Del.quantity cm3/ : 9.0...11.0
1000 s: (6.0...14.0)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 57
 Edition : 07.02.89
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 403 476 059

Injection pump
 Pump designation : PES6MM100/720RS1130
 EP type number : 0 413 406 122
 Governor
 Governor design. : RSV750...1250MWOA325
 -1
 Governor no. : 0 420 085 112

Customer-spec. information
 Customer : DB

Engine : OM 366 A

1st version kW : 125.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1230

Rack travel in mm : 10.90...11.00

Del. quantity cm3/ : 7.8...8.0
 100 s: (7.6...8.2)

Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 750.0
 Rack travel in mm : 5.6...5.7
 Del. quantity cm3/ : 0.9...1.3
 100 s: (0.7...1.5)

Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1230
 Del. quantity : 78.0...80.0
 1000 : (76.0...82.0)

Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 46...54

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:
 1st rack travel in: 9.90
 Speed rpm : 1270...1275
 2nd rack travel in: 4.00
 Speed rpm : 1295...1310

3rd rack travel in: 4.00
Speed rpm : 1301...1315
4th rack travel in: 1350
Speed rpm : 0.30...1.70
5th rack travel in: 1276...1280
Speed rpm : 9.90

LOW IDLE 1

Control Lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 750
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 750
Rack travel in mm : 5.60...5.70

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 55.0...59.0
1000 s: (53.0...61.0)
Spread cm³ : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1270...1275

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 750
Rack travel in mm : 5.60...5.70
Del.quantity cm³/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm³ : 3.50
1000 s: (5.00)

Remarks:

:

H09

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 M
Edition : 29.03.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 476 060
Injection pump
Pump designation : PES6MW100/720RS1161
EP type number : 0 413 406 148
Governor
Governor design. : RSV325...1150MW5A327
Governor no. : 0 420 085 084

Customer-spec. information
Customer : KHD

Engine : BF6L913C

1st version kW : 134.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.45...3.55
: (3.40...3.60)
Rack travel in mm : 9.00...12.00

H10

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.80...12.90

Del.quantity cm³/ : 12.3...12.5

100 s: (12.1...12.7)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 4.9...5.0

Del.quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 1000

Del.quantity : 123.0...125.0

1000 : (121.0...127.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 52...60

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.80

Speed rpm : 1200...1210

2nd rack travel in: 4.00

Speed rpm : 1245...1275

4th rack travel in: 1440
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 18...25
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 4.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 325
Rack travel in mm : 4.70...4.80
Rack travel in mm : 2.00
Speed rpm : 455...515

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.80...12.90
2nd speed rpm : 800
Rack travel in m: 13.20...13.30
3rd speed rpm : 900
Rack travel in m: 13.00...13.20
4th speed rpm : 1000
Rack travel in m: 12.80...13.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 500
Rack travel mm : 11.60...11.70

Measurement

Speed 1/min : 500

1st pressure hPa : 1000
Rack travel in m: 13.20...13.30
2nd pressure hPa : -
Rack travel in m: 10.50...10.60
3rd pressure hPa : 650
Rack travel in m: 12.30...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 800
Del.quantity cm3/ : 125.0...129.0
1000 s: (123.0...131.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 74.0...76.0
1000 s: (72.0...78.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1200...1210

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.90...5.00
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 39
 Edition : 03.03.89
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 403 476 062

Injection pump
 Pump designation : PES6MW100/720RS1172
 EP type number : 0 413 406 155
 Governor
 Governor design. : RSV350...1300MWOA329
 -1
 Governor no. : 0 420 085 091

Customer-spec. information
 Customer : DB

Engine : OM 366 LA

1st version kW : 169.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 19.00...21.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 10.5...10.7
 100 s: (10.3...10.9)

Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 5.9...6.1
 Del.quantity cm3/ : 1.0...1.4
 100 s: (0.7...1.6)

Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1280
 Aneroid pressure h: 1000
 Del.quantity : 105.0...107.0
 1000 : (103.0...109.0)

Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 46...54

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:
 1st rack travel in: 13.40
 Speed rpm : 1320...1330
 2nd rack travel in: 4.00

Speed rpm : 1395...1425
4th rack travel in: 1450
Speed rpm : 0.30...1.70

LOW IDLE 1

Control Lever
position degrees: 12...20
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack trave: 7.60
Speed rpm : 350
Rack travel in mm : 5.90...6.10

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : 450
Rack travel in m: 11.90...12.10
2nd pressure hPa : 650
Rack travel in m: 13.40...13.60
3rd pressure hPa : 1000
Rack travel in m: 14.40...14.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 900
Del.quantity cm3/ : 98.0...101.0
1000 s: (95.5...103.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 31.0...33.0
1000 s: (29.0...35.0)
Spread cm3 : 3.50
1000 s: (6.00)

BREAKAWAY

H13

1st version
1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...100.0
1000 s: (87.0...103.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 A 18
 Edition : 30.09.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 063
 Injection pump
 Pump designation : PES6MW100/72ORS1125
 EP type number : 0 413 406 119
 Governor
 Governor design. : RSV350...1300MWOA329
 -3
 Governor no. : 0 420 085 094

Customer-spec. information
 Customer : DB

Engine : OM 362 LA

1st version kW : 134.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.0

Del.quantity cm3/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 900

Del.quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 55...63

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.80

Speed rpm : 1330...1340

2nd rack travel in: 4.00

Speed rpm : 1400...1430
4th rack travel in: 1560
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 12...20
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.90...6.00

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.80...11.90

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 10.60...10.70
2nd pressure hPa : 450
Rack travel in m: 11.30...11.60
3rd pressure hPa : -
Rack travel in m: 9.70...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 800
Del.quantity cm3/ : 88.5...91.5
1000 s: (86.0...94.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 46.0...48.0
1000 s: (44.0...50.0)

BREAKAWAY

1st version

H15

1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1330...1340

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 88.0...98.0
1000 s: (85.0...101.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.00
Del.quantity cm3/ : 11.0...15.0
1000 s: (9.0...17.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 49
 Edition : 30.09.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 064
 Injection pump
 Pump designation : PES6MW100/720RS1129
 EP type number : 0 413 406 121
 Governor
 Governor design. : RSV350...1300MWOA329
 -2
 Governor no. : 0 420 085 095

Customer-spec. information
 Customer : DB

Engine : OM 366 LA

1st version kW : 150.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 9.7...9.9

100 s: (9.5...10.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 0.8...1.2

100 s: (0.6...1.4)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 900

Del.quantity : 97.0...99.0

1000 : (95.0...101.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 56...64

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.50

Speed rpm : 1320...1330

2nd rack travel in: 4.00

Speed rpm : 1385...1415
4th rack travel in: 1450
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 7.60
Speed rpm : 350
Rack travel in mm : 5.50...5.70

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.50...9.60

Measurement

Speed 1/min : 500

1st pressure hPa : 175
Rack travel in m: 10.00...10.10
2nd pressure hPa : 300
Rack travel in m: 10.80...11.10
3rd pressure hPa : 900
Rack travel in m: 11.50...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 750
Del.quantity cm3/ : 86.5...89.5
1000 s: (84.0...92.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 48.0...50.0
1000 s: (46.0...52.0)

BREAKAWAY

1st version

H17

1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 88.0...98.0
1000 s: (85.0...101.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 8.0...12.0
1000 s: (6.0...14.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 48
 Edition : 07.02.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 065
 Injection pump
 Pump designation : PES6MW100/720RS1129-
 2
 EP type number : 0 413 406 140
 Governor
 Governor design. : RSV350...1300MWOA331
 Governor no. : 0 420 085 096

Customer-spec. information
 Customer : DB

Engine : OM 366 LA

1st version kW : 150.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 11.20...11.30

Del.quantity cm³/ : 9.3...9.5

100 s: (9.1...9.7)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm³/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 6.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 900

Del.quantity : 93.0...95.0

1000 : (91.0...97.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 58...66

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.20
Speed rpm : 1320...1330
2nd rack travel in: 4.00
Speed rpm : 1385...1415
4th rack travel in: 1450
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 26...34
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack travel: 7.60
Speed rpm : 350
Rack travel in mm : 5.90...6.10

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude

Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.20...9.30

Measurement

Speed 1/min : 500

1st pressure hPa : 175
Rack travel in m: 9.80...9.90
2nd pressure hPa : 300
Rack travel in m: 10.80...11.10
3rd pressure hPa : 900
Rack travel in m: 11.20...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 750
Del.quantity cm3/ : 83.0...87.0
1000 s: (81.0...89.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 46.0...48.0
1000 s: (44.0...50.0)

BREAKAWAY

H19

1st version

1mm rack travel less than

full load rack tr: 10.20
Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 88.0...98.0
1000 s: (85.0...101.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Test hydr. locking device for starting
with 500...1999 hPa air pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 52
Edition : 24.02.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 476 066
Injection pump
Pump designation : PES6MW100/72ORS1130
EP type number : 0 413 406 122
Governor
Governor design. : RSV350...1300MWDA318
-5
Governor no. : 0 420 085 100

Customer-spec. information
Customer : DB-LKW

Engine : OM 366 A

1st version kW : 130.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 8.1...8.3

100 s: (7.9...8.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Del.quantity : 81.0...83.0

1000 : (79.0...85.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 55...63

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.00

Speed rpm : 1330...1340
2nd rack travel in: 4.00
Speed rpm : 1400...1430
4th rack travel in: 1560
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 25...33
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 8.0

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 7.90...8.10

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm3/ : 68.0...71.0
1000 s: (65.5...73.5)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1330...1340

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.90...8.10
Del.quantity cm3/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 57
Edition : 11.05.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 476 067
Injection pump
Pump designation : PES6MM100/72ORS1131
EP type number : 0 413 406 123
Governor
Governor design. : RSV350...1300MWOA2
Governor no. : 0 420 085 109

Customer spec. information
Customer : DB-NKW

Engine : OM 366 LA

1st version kW : 150.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness : 6.00X1.50X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.2...6.9

Del.quantity cm3/ : 1.0...1.2

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 100.0...102.0

1000 : (98.0...104.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.60

Speed rpm : 1340...1345
2nd rack travel in: 4.00
Speed rpm : 1387...1400
3rd rack travel in: 4.00
Speed rpm : 1420...1450
4th rack travel in: 1600
Speed rpm : 0.30...1.70
5th rack travel in: 1335...1350
Speed rpm : 11.60

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 6.20...6.90
Rack travel in mm : 2.00
Speed rpm : 420...480

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 250
Rack travel mm : 11.30...11.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.80...10.90
2nd pressure hPa : 400
Rack travel in m: 12.10...12.40
3rd pressure hPa : 700
Rack travel in m: 12.60...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm3/ : 86.5...89.5
1000 s: (84.0...92.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 53.0...55.0
1000 s: (51.0...57.0)

BREAKAWAY

H23

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1340...1345

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 83.0...93.0
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.20...6.90
Del.quantity cm3/ : 10.0...12.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Test hydr. locking device for starting
with 500...1999 hPa air pressure.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 60
 Edition : 03.03.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 069
 Injection pump
 Pump designation : PES6MM100/72ORS1129
 EP type number : 0 413 406 121
 Governor
 Governor design. : RSV750...1250MMOA325
 -2
 Governor no. : 0 420 085 115
 Customer-spec. information
 Customer : DB
 Engine : OM 366 LA
 1st version kW : 146.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1230
 Rack travel in mm : 11.50...11.60
 Del.quantity cm3/ : 9.7...9.9
 100 s: (9.5...10.1)
 Spread cm3 : 0.3
 100 s: (0.6)
 2nd speed rpm : 750.0
 Rack travel in mm : 4.9...5.1
 Del.quantity cm3/ : 1.0...1.4
 100 s: (0.7...1.6)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1230
 Del.quantity : 97.0...99.0
 1000 : (95.0...101.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 44...52

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:
 1st rack travel in: 10.50

Speed rpm : 1270...1275
2nd rack travel in: 4.00
Speed rpm : 1295...1310
3rd rack travel in: 4.00
Speed rpm : 1301...1315
4th rack travel in: 1350
Speed rpm : 0.30...1.70
5th rack travel in: 1276...1280
Speed rpm : 10.50

Remarks:

:

LOW IDLE 1

Control lever

position degrees: 24...32

Setting point w/out bumper spring

Speed rpm : 750

Rack travel in mm : 5.0

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 750

Rack travel in mm : 4.90...5.10

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm3/ : 85.0...89.0

1000 s: (83.0...91.0)

Spread cm3 : 5.00

1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

Speed rpm : 1270...1275

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 88.0...98.0

1000 s: (85.0...101.0)

LOW IDLE

Speed rpm : 750

Rack travel in mm : 4.90...5.10

Del.quantity cm3/ : 10.0...14.0

1000 s: (7.5...16.5)

Spread cm3 : 3.50

1000 s: (5.00)

H25

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 66
 Edition : 31.03.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 070
 Injection pump
 Pump designation : PES6MW100/720RS1172
 EP type number : 0 413 406 155
 Governor
 Governor design. : RSV350...1300MWOA329
 Governor no. : 0 420 085 116
 Customer-spec. information
 Customer : DB-NKW
 Engine : OM 366 LA
 1st version kW : 170.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test Lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32
 Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 19.00...21.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280
 Rack travel in mm : 14.40...14.50
 Del.quantity cm3/ : 10.4...10.6
 100 s: (10.2...10.8)
 Spread cm3 : 0.3
 100 s: (0.6)
 2nd speed rpm : 350.0
 Rack travel in mm : 5.9...6.1
 Del.quantity cm3/ : 1.0...1.4
 100 s: (0.7...1.6)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1280
 Aneroid pressure h: 1000
 Del.quantity : 104.0...106.0
 1000 : (102.0...108.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 56...64
 Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:
 1st rack travel in: 13.40
 Speed rpm : 1330...1340
 2nd rack travel in: 4.00

Speed rpm : 1410...1440
4th rack travel in: 1500
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack travel: 7.60
Speed rpm : 350
Rack travel in mm : 5.90...6.10

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 12.60...12.80
2nd pressure hPa : 500
Rack travel in m: 13.70...13.90
3rd pressure hPa : 1000
Rack travel in m: 14.40...14.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 900
Del.quantity cm³/ : 98.0...101.0
1000 s: (95.5...103.5)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 42.0...44.0
1000 s: (40.0...46.0)
Spread cm³ : 3.50
1000 s: (6.00)

BREAKAWAY

H27

1st version
1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1330...1340

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...110.0
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO 13,2 B1
 Edition : 07.02.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 546 019
 Injection pump
 Pump designation : PE6MW100/320RS1174
 EP type number : 0 413 506 106
 Governor
 Governor design. : RGV325...1500MW101
 Governor no. : 0 420 083 167

Customer-spec. information
 Customer : BAUDOUIN

Engine : 6 F 11 SRE

1st version kW : 206.0
 Rated speed : 3000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.45...3.55
 : (3.40...3.60)

Rack travel in mm : 9.00...12.00

H28

Firing order : 1- 4- 3- 6- 5- 2

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1500

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 11.9...12.1

100 s: (11.7...12.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 7.0...7.2

Del.quantity cm3/ : 0.8...1.2

100 s: (0.5...1.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1650

travel mm : 9.40...9.80

2nd speed rpm : 1550

travel mm : 8.50...8.70

3rd speed rpm : 600

travel mm : 2.50...3.10

4th speed rpm : 325

travel mm : 1.00...1.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1500

Aneroid pressure h: 700

Del.quantity : 119.0...121.0

1000 : (117.0...123.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 52...60

Testing:

1st rack travel in: 10.10

Speed rpm : 1540...1550
2nd rack travel in: 4.00
Speed rpm : 1625...1655
4th rack travel in: 1750
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.1

Testing:

Speed rpm : 100
Minimum rack travel: 8.50
Speed rpm : 325
Rack travel in mm : 7.00...7.20

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1500
Rack travel in m: 11.10...11.20
2nd speed rpm : 800
Rack travel in m: 11.90...12.00
3rd speed rpm : 1000
Rack travel in m: 11.30...11.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 500
Rack travel mm : 11.30...11.40

Measurement

Speed 1/min : 500

1st pressure hPa : 700
Rack travel in m: 11.90...12.00
2nd pressure hPa : 600
Rack travel in m: 11.50...11.60

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 800
Del.quantity cm³/ : 128.5...131.5
1000 s: (126.0...134.0)
Spread cm³ : 5.00
1000 s: (7.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 109.0...111.0
1000 s: (107.0...113.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1540...1550

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 105.0...115.0
1000 s: (102.0...118.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 7.00...7.20
Del.quantity cm³/ : 8.0...12.0
1000 s: (5.5...14.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 13,4 E
Edition : 14.04.89
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 548 022

Injection pump
Pump designation : PE8MW100/720LS1149
EP type number : 0 413 508 105
Governor
Governor design. : RQV300...1150MW75-1
Governor no. : 0 420 083 151

Customer-spec. information
Customer : KHD

Engine : F 8L 513

1st version kW : 188.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
: (3.05...3.25)
Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 11.40...11.50
Del. quantity cm³/ : 10.6...10.8
100 s: (10.4...11.0)
Spread cm³ : 0.3
100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 7.3...7.4
Del. quantity cm³/ : 1.1...1.5
100 s: (0.9...1.7)
Spread cm³ : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1200
travel mm : 8.40...8.60
2nd speed rpm : 1275
travel mm : 9.10...9.50
3rd speed rpm : 650
travel mm : 4.00...4.60
4th speed rpm : 300
travel mm : 1.00...1.40

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1150
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Del. quantity : 106.0...108.0
1000 : (104.0...110.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 10.40
Speed rpm : 1190...1200
2nd rack travel in: 4.50
Speed rpm : 1260...1290
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3

Testing:
Speed rpm : 100
Minimum rack travel: 9.50
Speed rpm : 300
Rack travel in mm : 7.30...7.40

CONSTANT REGULATION
Speed rpm : 320...420

TORQUE CONTROL
Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.40...11.50
2nd speed rpm : 650
Rack travel in m: 11.80...11.90
3rd speed rpm : 900
Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm3/ : 106.0...108.0
1000 s: (104.0...110.0)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.40
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...150.0
1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.30...7.40
Del.quantity cm3/ : 11.0...15.0
1000 s: (9.0...17.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 13,4d13
 Edition : 11.03.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 548 026
 Injection pump
 Pump designation : PE8MW100/720LS1128
 EP type number : 0 413 508 103
 Governor
 Governor design. : RQ300...1150MW63-4
 Governor no. : 0 420 082 031

Customer-spec. information
 Customer : KHD

Engine : BF 8L 513

1st version kW : 243.0
 Rated speed : 2300
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 12.90...13.00
 Del.quantity cm3/ : 14.4...14.6
 100 s: (14.2...14.8)
 Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 6.5...6.7
 Del.quantity cm3/ : 1.3...1.7
 100 s: (1.1...1.9)
 Spread cm3 : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280
 travel mm : 9.00...9.80
 2nd speed rpm : 1150
 travel mm : 6.60...6.80
 3rd speed rpm : 650
 travel mm : 5.80...6.20
 4th speed rpm : 300
 travel mm : 1.20...2.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Aneroid pressure h: 800
 Del.quantity : 144.0...146.0
 1000 : (142.0...148.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 30...38

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.90
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1265...1295
4th rack travel in: 1380
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.6

Testing:
Speed rpm : 100
Minimum rack travel: 8.20
Speed rpm : 300
Rack travel in mm : 6.50...6.70

CONSTANT REGULATION
Speed rpm : 320...400

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.90...13.00
2nd speed rpm : 650
Rack travel in m: 13.60...13.70
3rd speed rpm : 850
Rack travel in m: 13.20...13.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 480
Rack travel mm : 13.00...1310

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.70...11.80
2nd pressure hPa : 370
Rack travel in m: 12.10...12.40

3rd pressure hPa : 800
Rack travel in m: 13.60...13.70

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 650
Del.quantity cm3/ : 151.0...153.0
1000 s: (149.0...155.0)
Spread cm3 : 5.00
1000 s: (7.00)
Aneroid pressure h: -
Speed rpm : 450
Del.quantity cm3/ : 107.0...109.0
1000 s: (105.0...111.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...150.0
1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.50...6.70
Del.quantity cm3/ : 13.0...17.0
1000 s: (11.0...19.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 13,4 F
 Edition : 28.11.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 548 027
 Injection pump
 Pump designation : PE8MW100/720LS1173
 EP type number : 0 413 508 108
 Governor
 Governor design. : RQV300...1150MW99
 Governor no. : 0 420 083 163

Customer-spec. information
 Customer : KHD

Engine : F8L513

1st version kW : 188.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.20...11.30

Del.quantity cm³/ : 10.3...10.5

100 s: (10.1...10.7)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 5.0...5.2
 Del.quantity cm³/ : 1.1...1.5
 100 s: (0.8...1.7)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280
 travel mm : 11.10...11.50
 2nd speed rpm : 1190
 travel mm : 10.10...10.30
 3rd speed rpm : 400
 travel mm : 2.90...3.50
 4th speed rpm : 300
 travel mm : 2.20...2.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1200
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del.quantity : 103.0...105.0
 1000 : (101.0...107.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 45...53

Testing:

1st rack travel in: 10.20
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 1370
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 300
Rack travel in mm : 5.00...5.20

TORQUE CONTROL

Dimension a mm : 0.60
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.20...11.30
2nd speed rpm : 650
Rack travel in m: 11.80...11.90
3rd speed rpm : 900
Rack travel in m: 11.50...11.70

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del.quantity cm3/ : 105.5...108.5
1000 s: (103.0...111.0)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...150.0
1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 13,4D15
Edition : 07.02.89
Replaces : 11.11.88
Test oil : ISO-4113

Combination no. : 0 403 548 031

Injection pump
Pump designation : PE8MW100/720LS1118
EP type number : 0 413 508 102
Governor
Governor design. : RQ300/1150MW63-5
Governor no. : 0 420 082 035

Customer-spec. information
Customer : KHD

Engine : BF8L513

1st version kW : 243.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
: (3.05...3.25)

Rack travel in mm : 9.00...12.00

J08

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 14.1...14.3

100 s: (13.9...14.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 6.9...7.1
Del.quantity cm3/ : 1.3...1.7
100 s: (1.1...1.9)
Spread cm3 : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1280
travel mm : 9.30...9.70
2nd speed rpm : 1200
travel mm : 6.80...7.00
3rd speed rpm : 380
travel mm : 4.10...4.70
4th speed rpm : 300
travel mm : 1.90...2.30

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Aneroid pressure h: 1000
Del.quantity : 141.0...143.0
1000 : (139.0...145.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 28...36

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 11.90
Speed rpm : 1190...1205
2nd rack travel in: 4.00
Speed rpm : 1275...1305
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.0

Testing:
Speed rpm : 100
Minimum rack travel: 8.50
Speed rpm : 300
Rack travel in mm : 6.90...7.10

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.90...13.00
2nd speed rpm : 650
Rack travel in m: 13.60...13.70
3rd speed rpm : 850
Rack travel in m: 13.00...13.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.80...11.90

Measurement
Speed 1/min : 500

1st pressure hPa : 380
Rack travel in m: 12.20...12.50
2nd pressure hPa : 480
Rack travel in m: 13.10...13.20
3rd pressure hPa : 1000
Rack travel in m: 13.50...13.60

START CUT-OUT

J09

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 650
Del.quantity cm3/ : 146.5...149.5
1000 s: (144.0...152.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 450
Del.quantity cm3/ : 107.0...109.0
1000 s: (105.0...111.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 1190...1205

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...150.0
1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.90...7.10
Del.quantity cm3/ : 13.0...17.0
1000 s: (11.0...19.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BENCH AND PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : K00-13/4-F1
 Edition : 02.02.89
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0-413-508-002

Injection pump
 Pump designation : P80M100/720LS1173
 IP type number : 0-413-508-008
 Governor
 Governor design : R030/1150M61-2
 Governor no. : 0-420-008-006

Customer-spec. information

Customer : K00

Engine : F00-513

1st version kW : 108.0

Rated speed : 2300

TEST DEVICE REQUIREMENTS

Test oil

Inlet temp. °C : 30...42

Overflow valve

: 1-417-413-017

Inlet press., bar : 1.50

Test nozzle holder

assembly : 0-601-313-009

Opening

pressure, bar : 172...175

Test lines : 1-600-310-014

Outside diameter

x Wall thickness

x Length mm : 6.000/2.000/600

(A) Injection pump setting values

Insp. values in parentheses

Set equal delivery quant.

per values _____

BEFORE THE DELIVERY

Test pressure, bar : 30...32

Pressure mm : 3.10...3.20

: (3.05...3.25)

Rack travel in mm : 9.00...12.00

100

Firing order : 1-8-7-2-6-5-4-3

BASIC SETTINGS

1st speed rpm : 1150

Rack travel in mm : 11.20...11.30

Del. quantity cm³ : 10.3...10.5

100 s : (10.1...10.7)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.1

Del. quantity cm³ : 1.1...1.5

100 s : (0.8...1.7)

Spread cm³ : 0.3

100 s : (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1200

travel mm : 8.00...9.00

2nd speed rpm : 1200

travel mm : 6.00...6.80

3rd speed rpm : 420

travel mm : 3.50...4.10

4th speed rpm : 300

travel mm : 1.50...1.90

GUIDE SLEEVE POSITION

Control-lever position

degree : -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del. quantity : 103.0...105.0

1000 : (101.0...107.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 26...34

Setting point:
Speed rpm : 600
Rack travel in mm : 20.0

Testing:
1st rack travel in: 10.20
Speed rpm : 1190...1205
2nd rack travel in: 4.00
Speed rpm : 1245...1275
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

TORQUE CONTROL
Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.20...11.30
2nd speed rpm : 650
Rack travel in m: 11.80...11.90
3rd speed rpm : 900
Rack travel in m: 11.50...11.80

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm3/ : 105.5...108.5
1000 s: (103.0...111.0)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.20

Speed rpm : 1190...1205

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...150.0
1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.10
Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 13,4 F2
 Edition : 31.03.89
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 403 548 033

Injection pump
 Pump designation : PE8MW100/720LS1173
 EP type number : 0 413 508 108
 Governor
 Governor design. : RQV450...1150MW70-1
 Governor no. : 0 420 083 179

Customer-spec. information
 Customer : KHD

Engine : F8L513

1st version kW : 159.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 9.1...9.3

100 s: (8.9...9.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 450.0
 Rack travel in mm : 4.8...5.0
 Del.quantity cm3/ : 1.1...1.5
 100 s: (0.8...1.7)
 Spread cm3 : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1230
 travel mm : 9.50...9.90
 2nd speed rpm : 1190
 travel mm : 8.90...9.10
 3rd speed rpm : 650
 travel mm : 2.80...3.40
 4th speed rpm : 450
 travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1150
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del.quantity : 91.0...93.0
 1000 : (89.0...95.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 51...59

Testing:

1st rack travel in: 9.20
Speed rpm : 1180...1190
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1320
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 14...22
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 450
Rack travel in mm : 4.80...5.00

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.20...10.30
2nd speed rpm : 950
Rack travel in m: 10.60...10.70
3rd speed rpm : 1050
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 370 (390)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950
Del.quantity cm3/ : 92.5...95.5
1000 s: (90.0...98.0)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20
Speed rpm : 1180...1190

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...150.0
1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 450
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 v13
 Edition : 02.05.89
 Replaces : 9.85
 Test oil : ISO-4113

Combination no. : 9 400 085 222

Injection pump
 Pump designation : PES6A90D410RS2596
 EP type number : 0 410 896 073
 Governor
 Governor design. : RQV300...1400AB1196L
 Governor no. : 9 420 080 175

Customer-spec. information
 Customer : DAIMLER-BENZ BRASIL

Engine : OM352A

1st version kW : 125.3
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 7.1...7.2

100 s: (6.9...7.4)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 9.4...9.6

Del.quantity cm3/ : 1.3...1.7

100 s: (1.1...1.9)

Spread cm3 : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Aneroid pressure h: 700

Del.quantity : 71.5...72.5

1000 : (69.5...74.5)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:
1st rack travel in: 11.40
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1570...1600
4th rack travel in: 1750
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 26...34

Testing:
Speed rpm : 100
Minimum rack travel: 11.00
Speed rpm : 300
Rack travel in mm : 9.40...9.60
Rack travel in mm : 2.00
Speed rpm : 610...670

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 12.40...12.50
2nd speed rpm : 600
Rack travel in m: 13.80...13.90
3rd speed rpm : 900
Rack travel in m: 13.30...13.50
4th speed rpm : 1100
Rack travel in m: 12.80...13.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.80...13.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.60...12.70
2nd pressure hPa : 300
Rack travel in m: 13.50...13.60
3rd pressure hPa : 240
Rack travel in m: 12.80...13.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

J15

1st version
Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm3/ : 71.0...73.0
1000 s: (68.5...75.5)
Aneroid pressure h: 700
Speed rpm : 900
Del.quantity cm3/ : 72.0...74.0
1000 s: (69.5...76.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 56.0...57.0
1000 s: (54.0...59.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 73.0...83.0
1000 s: (70.0...86.0)
Rack travel in mm : 15.60...16.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 d
Edition : 02.05.89
Replaces : 24.7.87
Test oil : ISO-4113

Combination no. : 9 400 085 289

Injection pump
Pump designation : PES4A90D410RS2729
EP type number : 9 400 084 009
Governor
Governor design. : RQV300...1300AB1228L
Governor no. : 9 420 080 231

Customer-spec. information
Customer : DAIMLER-BENZ BRASIL

Engine : OM364A

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 8.4...8.5

100 s: (8.2...8.7)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 8.9...9.1

Del.quantity cm3/ : 0.7...1.1

100 s: (0.5...1.3)

Spread cm3 : 0.2

100 s: (0.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1380

travel mm : 8.50...8.60

2nd speed rpm : 300

travel mm : 0.90...1.30

3rd speed rpm : 500

travel mm : 2.20...2.60

4th speed rpm : 900

travel mm : 4.90...5.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1380

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 84.5...85.5

1000 : (82.5...87.5)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 61...69

Testing:

1st rack travel in: 12.70
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1475...1505
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 18...26

Testing:

Speed rpm : 100
Minimum rack travel: 10.20
Speed rpm : 300
Rack travel in mm : 8.60...8.80

CONSTANT REGULATION

Speed rpm : 540...680

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1300
Rack travel in m: 13.70...13.80
2nd speed rpm : 500
Rack travel in m: 15.20...15.30
3rd speed rpm : 850
Rack travel in m: 14.80...15.00
4th speed rpm : 1000
Rack travel in m: 14.30...14.60

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 15.20...15.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 13.50...13.60
2nd pressure hPa : 570
Rack travel in m: 14.80...14.90
3rd pressure hPa : 500
Rack travel in m: 13.90...14.10

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 500
Del.quantity cm3/ : 81.0...83.0
1000 s: (78.5...85.5)
Aneroid pressure h: 700
Speed rpm : 850
Del.quantity cm3/ : 88.0...90.0
1000 s: (84.5...92.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 64.0...66.0
1000 s: (61.5...68.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 16.00...17.00

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEZ 6,1 a
Edition : 02.05.89
Replaces : 21.5.87
Test oil : ISO-4113

Combination no. : 9 400 085 293

Injection pump
Pump designation : PES6A80D410RS2527
EP type number : 9 400 093 005
Governor
Governor design. : RQV300...1400AB1234L
Governor no. : 9 420 080 241

Customer-spec. information
Customer : DEUTZ ARGENTINA

Engine : F 6 L 913

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
(1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 6.9...7.0

100 s: (6.7...7.1)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.6

Del.quantity cm3/ : 0.8...1.1

100 s: (0.7...1.3)

Spread cm3 : 0.2

100 s: (0.3)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1460

travel mm : 8.40...8.60

2nd speed rpm : 300

travel mm : 0.70...1.20

3rd speed rpm : 550

travel mm : 2.70...3.00

4th speed rpm : 775

travel mm : 4.10...4.60

5th speed rpm : 950

travel mm : 5.20...5.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1420

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 69.0...70.0

1000 : (67.5...71.5)

Spread cm3 : 2.50

1000 : (4.00)

RATED SPEED

1st version
Control lever
position degrees: 55...63

Testing:

1st rack travel in: 11.00
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1570...1600
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 6...14

Testing:

Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 540...600

CONSTANT REGULATION

Speed rpm : 400...500

TORQUE CONTROL

Dimension a mm : 0.90
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 12.00...12.10
2nd speed rpm : 500
Rack travel in m: 12.90...13.00
3rd speed rpm : 1000
Rack travel in m: 12.70...12.90
4th speed rpm : 1200
Rack travel in m: 12.20...12.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 63.0...65.0
1000 s: (61.0...67.0)
Speed rpm : 1000
Del.quantity cm³/ : 67.0...69.0
1000 s: (65.0...71.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1440...1450

INTERMEDIATE RATED SPEED
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 a 8
 Edition : 02.05.89
 Replaces : 1.9.88
 Test oil : ISO-4113

Combination no. : 9 400 085 295

Injection pump
 Pump designation : PES4A90D410RS2666
 EP type number : 0 410 894 029
 Governor
 Governor design. : RQV300...1400AB1065-5L
 Governor no. : 0 420 212 169

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 66.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del.quantity cm³/ : 6.3...6.4

100 s: (6.1...6.6)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 300.0
 Rack travel in mm : 8.6...8.8
 Del.quantity cm³/ : 0.8...1.2
 100 s: (0.6...1.4)

Spread cm³ : 0.2
 100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30

2nd speed rpm : 500
 travel mm : 2.30...2.80

3rd speed rpm : 750
 travel mm : 4.10...4.30

4th speed rpm : 1500
 travel mm : 8.50...8.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1400
 Del.quantity : 63.0...64.0
 1000 : (61.0...66.0)

Spread cm³ : 3.00
 1000 : (5.00)

RATED SPEED

1st version
 Control lever
 position degrees: 58...66

Testing:
 1st rack travel in: 9.90

Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1560...1590
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 20...28

Testing:

Speed rpm : 100
Minimum rack trave: 10.20
Speed rpm : 300
Rack travel in mm : 8.60...8.80

CONSTANT REGULATION

Speed rpm : 540...680

TORQUE CONTROL

Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.90...11.00
2nd speed rpm : 630
Rack travel in m: 12.20...12.30
3rd speed rpm : 900
Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 630
Del.quantity cm3/ : 55.5...58.5
1000 s: (53.0...61.0)
Speed rpm : 900
Del.quantity cm3/ : 54.5...57.5
1000 s: (52.0...60.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1450...1460

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100

J21

Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

Remarks:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MMM 5,9 j
 Edition : 02.05.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 302
 Injection pump
 Pump designation : PES6A90D320RS2767
 EP type number : 9 400 084 017
 Governor
 Governor design. : RSV300...1400A0B2207
 -2R
 Governor no. : 9 420 083 238

Customer-spec. information
 Customer : MMM

Engine : TBD 229 EC6

1st version kW : 185.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 046

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 14.30...14.40

Del.quantity cm3/ : 12.0...12.1

100 s: (11.8...12.3)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.3...1.7

100 s: (1.1...1.9)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 120.0...121.0

1000 : (118.0...123.0)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever
position degrees: 62...70

Testing:
1st rack travel in: 13.30
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1540...1570
4th rack travel in: 1700
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 26...34
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.5

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 300
Rack travel in mm : 7.90...8.10
Rack travel in mm : 2.00
Speed rpm : 450...510

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 14.30...14.40
2nd speed rpm : 500
Rack travel in m: 14.30...14.50
5th speed rpm : 350
Rack travel in m: 15.50...16.10

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm3/ : 106.5...108.5
1000 s: (104.0...111.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.30
Speed rpm : 1440...1450

INTERMEDIATE RATED SPEED
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.90...8.10
Del.quantity cm3/ : 13.0...17.0
1000 s: (11.0...19.0)
Spread cm3 : 2.50
1000 s: (4.50)

Remarks:

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 6,6 f 2
 Edition : 02.05.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 303
 Injection pump
 Pump designation : PES6A95D410RS2714
 EP type number : 9 400 084 001
 Governor
 Governor design. : RQV375...1300AB1208-3L
 Governor no. : 9 420 080 263

Customer-spec. information
 Customer : FORD (FTO)

Engine : 6,6 TC

1st version kW : 127.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness : 6.00X2.00X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.15...3.25
 : (3.10...3.30)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.90
 & maximum rack tra: 21.00
 Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.10...12.20

Del.quantity cm³/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1345

travel mm : 8.50...8.60

2nd speed rpm : 350

travel mm : 1.30...1.60

3rd speed rpm : 700

travel mm : 4.10...4.50

4th speed rpm : 1100

travel mm : 6.30...6.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1345

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300
Aneroid pressure h: 700
Del.quantity : 86.0...88.0
1000 : (84.0...90.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:

1st rack travel in: 11.10
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1450...1480
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 12...20

Testing:

Speed rpm : 100
Minimum rack trave: 9.50
Speed rpm : 375
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 650...710

CONSTANT REGULATION

Speed rpm : 460...530

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 12.10...12.20
2nd speed rpm : 850
Rack travel in m: 12.50...12.60
4th speed rpm : 1000
Rack travel in m: 12.30...12.40

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 11.10...11.20
2nd pressure hPa : 510
Rack travel in m: 12.20...12.30
3rd pressure hPa : 420
Rack travel in m: 11.40...11.60

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 850
Del.quantity cm3/ : 85.0...88.0
1000 s: (82.5...90.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 61.0...63.0
1000 s: (59.0...65.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 115.0...129.0
1000 s: (-)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 375
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 6,6 m
 Edition : 02.05.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 304
 Injection pump
 Pump designation : PES6A95D412RS2709
 EP type number : 9 400 083 099
 Governor
 Governor design. : RQV350...1400AB1202-3L
 Governor no. : 9 420 080 262

Customer-spec. information
 Customer : FORD (FTO)

Engine : 6.6 L NA

1st version kW : 108.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.15...3.25
 : (3.10...3.30)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.40...10.50

Del.quantity cm³/ : 7.4...7.6

100 s: (7.2...7.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.6...6.8

Del.quantity cm³/ : 0.8...1.2

100 s: (0.5...1.4)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1420

travel mm : 8.50...8.60

2nd speed rpm : 350

travel mm : 1.30...1.60

3rd speed rpm : 700

travel mm : 4.20...4.60

4th speed rpm : 1100

travel mm : 6.10...6.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1420

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400
Del.quantity : 74.0...76.0
1000 : (72.0...78.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 59...65

Testing:

1st rack travel in: 9.40
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1540...1570
4th rack travel in: 1720
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 100
Minimum rack trave: 9.00
Speed rpm : 350
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 560...620

CONSTANT REGULATION

Speed rpm : 460...530

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm3/ : 63.0...66.0
1000 s: (60.5...68.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.40
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 112.0...126.0
1000 s: (-)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.60...6.80
Del.quantity cm3/ : 8.0...12.0
1000 s: (5.5...14.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 v 22
 Edition : 02.05.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 306
 Injection pump
 Pump designation : PES6A90D410RS2596
 EP type number : 0 410 896 073
 Governor
 Governor design. : RQV300...1400AB1066-7L
 Governor no. : 9 420 214 267

Customer-spec. information
 Customer : DAIMLER-BENZ BRASIL

Engine : OM352A

1st version kW : 121.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 7.7...7.8

100 s: (7.5...8.0)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 8.9...9.1

Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Aneroid pressure h: 700

Del.quantity : 77.5...78.5

1000 : (75.5...80.5)

Spread cm3 : 3.00

1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:
1st rack travel in: 11.50
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1570...1610
4th rack travel in: 1750
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 67...75

Testing:
Speed rpm : 100
Minimum rack travel: 10.30
Speed rpm : 300
Rack travel in mm : 8.90...9.10

CONSTANT REGULATION
Speed rpm : 560...680

TORQUE CONTROL
Dimension a mm : 0.80
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 12.40...12.50
2nd speed rpm : 500
Rack travel in m: 13.20...13.30
4th speed rpm : 1000
Rack travel in m: 12.70...12.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.20...13.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.30...12.40
2nd pressure hPa : 465
Rack travel in m: 12.90...13.00
3rd pressure hPa : 375
Rack travel in m: 12.50...12.70

START CUT-OUT

Speed 1/min : 220 (240)

K01

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 500
Del.quantity cm3/ : 65.5...67.5
1000 s: (64.5...68.5)
Aneroid pressure h: 700
Speed rpm : 1000
Del.quantity cm3/ : 74.5...78.5
1000 s: (73.0...80.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 56.5...58.5
1000 s: (54.5...60.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 71.0...81.0
1000 s: (68.0...84.0)
Rack travel in mm : 15.80...16.20

LOW IDLE

Speed rpm : 300
Rack travel in mm : 8.90...9.10
Del.quantity cm3/ : 9.0...15.0
1000 s: (7.0...17.0)
Spread cm3 : 2.00
1000 s: (4.00)

Remarks:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 10,0 e 2
 Edition : 02.05.89
 Replaces : 1.9.88
 Test oil : ISO-4113
 Combination no. : 9 400 087 308
 Injection pump
 Pump designation : PE5P110A720RS479
 EP type number : 9 400 087 040
 Governor
 Governor design. : RQ300/1050PA718-1
 Governor no. : 9 420 080 187

Customer-spec. information
 Customer : DAIMLER-BENZ BRASIL

Engine : OM355-5 A

1st version kW : 170.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 004

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.35...3.45
 : (3.30...3.50)
 Rack travel in mm : 9.00...12.00

K02

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 16.1...16.3

100 s: (15.8...16.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.1...1.6

100 s: (-)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 161.0...163.0

1000 : (158.0...166.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.20

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1150...1180

4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 100
Minimum rack trave: 8.50
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 375...415

TORQUE CONTROL

Dimension a mm : 0.35
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.20...12.30
2nd speed rpm : 600
Rack travel in m: 13.10...13.20
3rd speed rpm : 900
Rack travel in m: 12.70...13.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.10...13.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.40
2nd pressure hPa : 400
Rack travel in m: 12.40...12.50
3rd pressure hPa : 250
Rack travel in m: 11.10...11.30

START CUT-OUT

Speed 1/min : 230 (270)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm3/ : 177.0...181.0
1000 s: (174.0...184.0)
Aneroid pressure h: 700
Speed rpm : 900

Del.quantity cm3/ : 174.0...178.0
1000 s: (171.0...181.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 112.5...115.5
1000 s: (110.0...118.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (-)
Rack travel in mm : 13.30...14.30

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 s4
 Edition : 02.05.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 087 346
 Injection pump
 Pump designation : PE6P120A32ORS3186
 EP type number : 0 411 826 756
 Governor
 Governor design. : RQV250...1025PA657-1
 3
 Governor no. : 0 421 813 592

Customer-spec. information
 Customer : VOLVO

Engine : TD 102 F

1st version kW : 220.0
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

K04

Prestroke mm : 2.60...2.70
 : (2.55...2.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.40...11.50

Del.quantity cm³/ : 19.7...19.9

100 s: (19.4...20.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 3.9...4.1

Del.quantity cm³/ : 1.7...2.2

100 s: (1.4...2.4)

Spread cm³ : 0.5

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.10...1.30

2nd speed rpm : 500

travel mm : 4.10...4.90

3rd speed rpm : 700

travel mm : 6.30...6.70

4th speed rpm : 900

travel mm : 6.30...6.70

5th speed rpm : 1025

travel mm : 7.30...7.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000
Del.quantity : 197.0...199.0
1000 : (194.0...202.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:
1st rack travel in: 10.40
Speed rpm : 1055...1065
2nd rack travel in: 4.00
Speed rpm : 1110...1140
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 4...12

Testing:
Speed rpm : 100
Minimum rack travel: 5.40
Speed rpm : 250
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION
Speed rpm : 250...350

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.40...11.50

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 80
Rack travel in m: 9.00...9.10
3rd pressure hPa : 400
Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700

Del.quantity cm3/ : 143.0...145.0
1000 s: (140.0...148.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.40
Speed rpm : 1055...1065

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.90...4.10
Del.quantity cm3/ : 17.0...22.0
1000 s: (14.5...24.5)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 a2
 Edition : 02.05.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 087 357
 Injection pump
 Pump designation : PE6P120A320RS3178
 EP type number : 0 411 826 752
 Governor
 Governor design. : RQV250...1025PA657-1
 Governor no. : 0 421 813 567

Customer-spec. information
 Customer : VOLVO

Engine : TD 122 FS

1st version kW : 287.0
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 25.2...25.4

100 s: (24.9...25.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.8...5.1

Del.quantity cm3/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.10...1.30

2nd speed rpm : 500
 travel mm : 4.10...4.90

3rd speed rpm : 700
 travel mm : 6.30...6.70

4th speed rpm : 900
 travel mm : 6.30...6.70

5th speed rpm : 1025
 travel mm : 7.30...7.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1090

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 252.0...254.0
1000 : (249.0...257.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 61...69

Testing:

1st rack travel in: 13.00
Speed rpm : 1055...1065
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 6...14

Testing:

Speed rpm : 100
Minimum rack travel: 6.40
Speed rpm : 250
Rack travel in mm : 4.80...5.10

CONSTANT REGULATION

Speed rpm : 250...400

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.00...10.20

2nd pressure hPa : 100

Rack travel in m: 10.30...10.40

3rd pressure hPa : 810

Rack travel in m: 13.60...13.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700

Del.quantity cm3/ : 163.0...165.0

1000 s: (160.0...168.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 1055...1065

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 220.0...240.0

1000 s: (216.0...244.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.80...5.10

Del.quantity cm3/ : 18.0...23.0

1000 s: (15.5...25.5)

Spread cm3 : 5.00

1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.

Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 14,2 j
Edition : 02.05.89
Replaces : -
Test oil : ISO-4113
Combination no. : 9 400 087 372
Injection pump
Pump designation : PE8P120A920/4LS7002T
EP type number : 9 400 087 054
Governor
Governor design. : RQV200...1000PA547-2
Governor no. : 9 420 080 238

Customer-spec. information
Customer : SAAB-SCANIA

Engine : DSC 14 07

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-
6- 8

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 13.20...13.30
Del.quantity cm3/ : 18.7...18.9
100 s: (18.4...19.2)
Spread cm3 : 0.6
100 s: (0.9)

2nd speed rpm : 225.0
Rack travel in mm : 4.9...5.1
Del.quantity cm3/ : 1.0...1.4
100 s: (-)
Spread cm3 : 0.3
100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1040
travel mm : 8.40...8.50
2nd speed rpm : 225
travel mm : 1.00...1.60
3rd speed rpm : 350
travel mm : 2.50...2.90
4th speed rpm : 650
travel mm : 4.60...4.90

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1000
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 600
Del.quantity : -187.0...189.0
1000 : (184.0...192.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:

1st rack travel in: 12.20
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 6...14

Testing:

Speed rpm : 100
Minimum rack travel: 5.90
Speed rpm : 225
Rack travel in mm : 4.40...4.60
Rack travel in mm : 2.00
Speed rpm : 310...370

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 600
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.30...11.40
2nd pressure hPa : 355
Rack travel in m: 12.50...12.60
3rd pressure hPa : 260
Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600
Speed rpm : 1000
Del.quantity cm³/ : 183.0...191.0
1000 s: (181.0...193.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 137.0...141.0
1000 s: (135.0...143.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...290.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 b 7
 Edition : 20.12.88
 Replaces : -
 Test oil : ISO-4113

Combination no. : 9 400 230 103

Injection pump
 Pump designation : PES6A100D410RS2691-2
 EP type number : 9 410 230 028
 Governor
 Governor design. : RQV350...1100AB1227R
 Governor no. : 9 420 231 015

Customer-spec. information
 Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 156.6
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 13.0...13.2

100 s: (12.8...13.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1100

travel mm : 7.70...7.70

2nd speed rpm : 1150

travel mm : 8.00...8.60

3rd speed rpm : 1290

travel mm : 9.50...10.10

4th speed rpm : 350

travel mm : 1.20...1.60

5th speed rpm : 600

travel mm : 3.90...4.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1290

Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 130.5...132.5
1000 : (128.5...134.5)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:

1st rack travel in: 11.80
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1265...1295
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 9...17

Testing:

Speed rpm : 250
Minimum rack travel: 8.00
Speed rpm : 350
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 420...480

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.30
2nd pressure hPa : 535
Rack travel in m: 12.10...12.20
3rd pressure hPa : 390
Rack travel in m: 10.70...11.10

START CUT-OUT

Speed 1/min : 260 (280)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 79.0...83.0
1000 s: (77.0...85.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 165.0...185.0
1000 s: (160.0...190.0)
Rack travel in mm : 15.30...15.70

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 18.0...22.0
1000 s: (15.5...24.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: CDC # 3912645

Adjust stop lever to 0.5...1.0 mm
before stop.

Start-of-delivery mark is at 7° after
start of delivery.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a19
Edition : 20.12.88
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 230 109

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 030
Governor
Governor design. : RSV450...1100A2C2190
-21R
Governor no. : 9 420 234 164

Customer-spec. information
Customer : C.D.C.

Engine : 6CT830

1st version kW : 117.1
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

K12

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 8.9...9.1

100 s: (8.7...9.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 450.0
Rack travel in mm : 5.7...5.9
Del.quantity cm3/ : 1.6...2.0
100 s: (1.3...2.2)

Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 89.0...91.0

1000 : (87.0...93.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

1st rack travel in: 9.20
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1190...1220
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 29...37
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 450
Rack travel in mm : 5.70...5.90
Rack travel in mm : 2.00
Speed rpm : 525...585

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.20...10.30
2nd speed rpm : 750
Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm³/ : 90.5...94.5
1000 s: (88.5...96.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 450
Rack travel in mm : 5.70...5.90

Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: C.D.C. # 3911541

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a18
Edition : 20.12.88
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 230 110

Injection pump
Pump designation : PES6A100D320/3RS2691
-4

EP type number : 9 410 230 030
Governor
Governor design. : RSV450...1100AOC2190
-22R

Governor no. : 9 420 234 173

Customer-spec. information
Customer : C.D.C.

Engine : 6CT830

1st version kW : 150.6
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Phasing :
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 118.5...120.5

1000 : (116.5...122.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:
1st rack travel in: 11.10
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 5.3

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 450
Rack travel in mm : 5.70...5.90
Rack travel in mm : 2.00
Speed rpm : 500...560

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.10...12.20
2nd speed rpm : 750
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 750
Del.quantity cm³/ : 133.0...137.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.10
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 450
Rack travel in mm : 5.70...5.90

Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:
: C.D.C. # 3911542
Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Limit shutoff stop screw to 1.0 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a17
Edition : 20.12.88
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 230 111

Injection pump
Pump designation : PES6A1000320/3RS2691
-4

EP type number : 9 410 230 030
Governor
Governor design. : RSV450...1100A0C2190
-23R

Governer no. : 9 420 234 174

Customer-spec. information
Customer : C.D.C.

Engine : 6CT830

1st version kW : 134.2
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Phasing :
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 450.0
Rack travel in mm : 5.7...5.9
Del.quantity cm3/ : 1.6...2.0
100 s: (1.3...2.2)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del.quantity : 101.0...103.0
1000 : (99.0...105.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 49...57

Testing:

1st rack travel in: 10.20
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1210...1240
3rd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 31...39
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 450
Rack travel in mm : 5.70...5.90
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.20...11.30
2nd speed rpm : 750
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm3/ : 110.5...114.5
1000 s: (108.5...116.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 450

Rack travel in mm : 5.70...5.90
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: C.D.C. # 3911545

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Limit shutoff stop screw to 1.0 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 10,1 a9
 Edition : 07.04.89
 Replaces : 5.3.87
 Test oil : ISO-4113

Combination no. : 9 400 231 039

Injection pump
 Pump designation : PES6P110A720RS370
 EP type number : 0 412 016 052
 Governor
 Governor design. : RSV450...1050POA465
 Governor no. : 9 420 234 180

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6619A

1st version kW : 201.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x3.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.40...12.50

Del.quantity cm³/ : 17.4...17.6

100 s: (17.1...17.9)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 450.0

Rack travel in mm : 6.0...6.2

Del.quantity cm³/ : 1.9...2.5

100 s: (1.7...2.7)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del.quantity : 174.0...176.0

1000 : (171.0...179.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

1st rack travel in: 11.40

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1220...1250
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 25...33
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 450
Rack travel in mm : 6.00...6.20
Rack travel in mm : 2.00
Speed rpm : 600...660

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.40...12.50
2nd speed rpm : 650
Rack travel in m: 13.60...13.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.70
2nd pressure hPa : 280
Rack travel in m: 11.70...11.80
3rd pressure hPa : 480
Rack travel in m: 12.80...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 650
Del.quantity cm³/ : 198.5...201.5
1000 s: (195.0...205.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : -
1000 s: (123.0...133.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...210.0
1000 s: (165.0...215.0)
Rack travel in mm : 20.00...21.00

HIGH IDLE

1st version
Speed rpm : 1170
Rack travel in mm : 7.40...7.60

LOW IDLE

Speed rpm : 450
Rack travel in mm : 6.00...6.20
Del.quantity cm³/ : 19.0...25.0
1000 s: (17.0...27.0)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

: JOHN DEERE # RE29146

Starting/full-load transition speed
from holding magnet = 400 1/min.

Start-of-delivery mark at control-rod
travel 10.5 mm and 15° after start of
delivery.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : IHC 3,9 K
Edition : 10.03.89
replaces : 08.77
Calibrating oil : ISO 4113

Injection pump : VA 4/100H1200 CR187
Type number : 0 460 304 232

Customer-specific information
Customer : IHC

Engine : D 239

TEST BENCH REQUIREMENTS

Inlet press., bar : 0,2

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,5
(from BDC): +0,02(0,04)

Indicator setting:
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Setting value mm: 3,6...4,6

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 4,7...5,2

Full-load del. w/out charge press.:

Speed 1/min: 800
Del.quantity cm3/
1000H.: 70,0...71,0
Dispersion cm3/: 2,5
1000H.: -

Low-idle speed regulation:

Speed 1/min: 350
Del.quantity cm3/
1000H.: 12,0...18,0
Dispersion cm3/: 3,0
1000H.: -

Full-load speed regulation:

Speed 1/min: 1300
Del.quantity cm3/
1000H.: 24,0...32,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 85,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,3...2,3
mm: (1,0...2,6)
2nd speed 1/min: 900
TD travel mm: 3,6...4,6
mm: (3,3...4,9)
3rd speed 1/min: 1000
TD travel mm: 4,7...5,4
mm: (4,4...5,7)

Supply-pump pressure characteristic:

1st speed 1/min: 200
Supply-pump
pressure bar: 1,4...1,9
bar: (1,2...2,1)
2nd speed 1/min: 900
Supply-pump
pressure bar: 4,7...5,2
bar: (4,5...5,4)
3rd speed 1/min: 1200
Supply-pump
pressure bar: 5,7...6,2
bar: (5,5...6,4)

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 55...98
quantity cm³/10s: (40...113)
2nd speed 1/min: 1200
Overflow : 55...98
quantity cm³/10s: (40...113)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1330
1000H.: -
2nd speed 1/min: 1300
Del.quantity cm³/: 24,0...32,0
1000H.: (23,5...32,5)
3rd speed 1/min: 1180
Del.quantity cm³/: 74,0...77,0
1000H.: (73,5...77,5)
4th speed 1/min: 800
Del.quantity cm³/: 70,0...71,0
1000H.: (69,5...71,5)
5th speed 1/min: 500
Del.quantity cm³/: 68,0...71,0
1000H.: (67,5...71,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1200
Del.quantity cm³/: -
1000H.: -

Idle delivery:

1st speed 1/min: 350
Del.quantity cm³/: 12,0...18,0
1000H.: (10,0...20,0)
2nd speed 1/min: 420
Del.quantity cm³/: -
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 250-
2nd speed 1/min: 350

Mounting and assembly dimensions:

Angles:

Alpha ° : 24-4°
Beta ° : 40-8°
Gamma ° : 30 -8°
Delta ° : 60 +8°

Initial setting dimensions:

Dimension IV mm : 1,8

Governor-spring washer thickness
Dimension V mm : 24,65

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : IHC 3,9 K11
Edition : 10.03.89
replaces : 08.77
Calibrating oil : ISO 4113

Injection pump : VA 4/100H1200 CR187
P
Type number : 0 460 304 233

Customer-specific information
Customer : IHC

Engine : D 239

TEST BENCH REQUIREMENTS

Inlet press., bar : 0,2

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,5
(from BDC): $\pm 0,02(0,04)$

Indicator setting:
Piston stroke mm : 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Setting value mm: 3,6...4,6

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 4,7...5,2

Full-load del. w/out charge press.:

Speed 1/min: 800
Del.quantity cm³/
1000H.: 70,0...71,0
Dispersion cm³/: 2,5
1000H.: -

Low-idle speed regulation:

Speed 1/min: 350
Del.quantity cm³/
1000H.: 12,0...18,0
Dispersion cm³/: 3,0
1000H.: -

Full-load speed regulation:

Speed 1/min: 1300
Del.quantity cm³/
1000H.: 24,0...32,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 85,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,3...2,3
mm: (1,0...2,6)
2nd speed 1/min: 900
TD travel mm: 3,6...4,6
mm: (3,3...4,9)
3rd speed 1/min: 1000
TD travel mm: 4,7...5,4
mm: (4,4...5,7)

Supply-pump pressure characteristic:

1st speed 1/min: 200
Supply-pump
pressure bar: 1,4...1,9
bar: (1,2...2,1)
2nd speed 1/min: 900
Supply-pump
pressure bar: 4,7...5,2
bar: (4,5...5,4)
3rd speed 1/min: 1200
Supply-pump
pressure bar: 5,7...6,2
bar: (5,5...6,4)

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 55...98
quantity cm³/10s: (40...113)
2nd speed 1/min: 1200
Overflow : 55...98
quantity cm³/10s: (40...113)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1330
1000H.: -
2nd speed 1/min: 1300
Del.quantity cm³/: 24,0...32,0
1000H.: (23,5...32,5)
3rd speed 1/min: 1180
Del.quantity cm³/: 74,0...77,0
1000H.: (73,5...77,5)
4th speed 1/min: 800
Del.quantity cm³/: 70,0...71,0
1000H.: (69,5...71,5)
5th speed 1/min: 500
Del.quantity cm³/: 68,0...71,0
1000H.: (67,5...71,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1200
Del.quantity cm³/: -
1000H.: -

Idle delivery:

1st speed 1/min: 350
Del.quantity cm³/: 12,0...18,0
1000H.: (10,0...20,0)
2nd speed 1/min: 420
Del.quantity cm³/: -
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 250-
2nd speed 1/min: 350

Mounting and assembly dimensions:

Angles:

Alpha ° : 24±4°
Beta ° : 40±8°
Gamma ° : 30 ±8°
Delta ° : 60 ±8°

Initial setting dimensions:

Dimension IV mm : 1,8
Governor-spring washer thickness
Dimension V mm : 24,65

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : IHC 5,8 P1
Edition : 10.03.89
replaces : 05.79
Calibrating oil : ISO 4113

Injection pump : VA 6/10H1150 CR191-1
Type number : 0 460 306 238

Customer-specific information
Customer : IHC

Engine : D 358

TEST BENCH REQUIREMENTS

Inlet press., bar : 0,2

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,4
(from BDC): $\pm 0,02(0,04)$

Indicator setting:
Piston stroke mm : 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Setting value mm: 4,0...4,8

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 5,4...5,9

Full-load del. w/out charge press.:

Speed 1/min: 800
Del.quantity cm³/
1000H.: 71,5...72,5
Dispersion cm³/: 2,5
1000H.: -

Low-idle speed regulation:

Speed 1/min: 450
Del.quantity cm³/
1000H.: 8,0...14,0
Dispersion cm³/: 3,0
1000H.: -

Full-load speed regulation:

Speed 1/min: 1200
Del.quantity cm³/
1000H.: 29,0...35,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600
TD travel mm: 0,8...1,8
2nd speed 1/min: 900
TD travel mm: 4,0...4,8
3rd speed 1/min: 1050
TD travel mm: 4,7...5,4

Supply-pump pressure characteristic:

1st speed 1/min: 200
Supply-pump
pressure bar: 1,9...2,4
bar: (1,7...2,6)
2nd speed 1/min: 900
Supply-pump
pressure bar: 5,4...5,9
bar: (5,2...6,1)
3rd speed 1/min: 1150
Supply-pump
pressure bar: 6,2...6,7
bar: (6,0...6,9)

Overflow quantity at overflow valve:

1st speed 1/min: 500

Overflow : 55...98
quantity cm³/10s: (40...113)
2nd speed 1/min: 1150
Overflow : 55...98
quantity cm³/10s: (40...113)

Remarks:

Delivery-quant. and breakaway char.:

1st speed 1/min: 1280
1000H.: -
2nd speed 1/min: 1200
Del.quantity cm³/: 29,0...35,0
1000H.: (28,0...36,0)
3rd speed 1/min: 1100
Del.quantity cm³/: 68,5...71,5
1000H.: (67,5...72,5)
4th speed 1/min: 800
Del.quantity cm³/: 71,5...72,5
1000H.: (70,5...73,5)
5th speed 1/min: 500
Del.quantity cm³/: 72,0...75,0
1000H.: (71,0...76,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1150
Del.quantity cm³/: -
1000H.: -

Idle delivery:

1st speed 1/min: 450
Del.quantity cm³/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 530
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 250-
2nd speed 1/min: 360

Mounting and assembly dimensions:

Angles:

Alpha ° : 25+4°
Beta ° : 46+8°
Gamma ° : 30 -8°
Delta ° : 60 +8°

Initial setting dimensions:

Dimension IV mm : 2,4
Governor-spring washer thickness
Dimension V mm : 24,65

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : IHC 5,8 P3
Edition : 10.03.89
replaces : 05.79
Calibrating oil : ISO 4113

Injection pump : VA 6/10H1150 CR191-1
P
Type number : 0 460 306 239

Customer-specific information
Customer : IHC

Engine : D 358

TEST BENCH REQUIREMENTS

Inlet press., bar : 0,2

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,4
(from BDC): $\pm 0,02(0,04)$

Indicator setting:
Piston stroke mm : 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Setting value mm: 4,0...4,8

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 5,4...5,9

Full-load del. w/out charge press.:

Speed 1/min : 800
Del.quantity cm³/
1000H.: 71,5...72,5
Dispersion cm³/
1000H.: -

Low-idle speed regulation:

Speed 1/min: 450
Del.quantity cm³/
1000H.: 8,0...14,0
Dispersion cm³/
1000H.: -

Full-load speed regulation:

Speed 1/min: 1200
Del.quantity cm³/
1000H.: 29,0...35,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600
TD travel mm: 0,8...1,8
2nd speed 1/min: 900
TD travel mm: 4,0...4,8
3rd speed 1/min: 1050
TD travel mm: 4,7...5,4

Supply-pump pressure characteristic:

1st speed 1/min: 200
Supply-pump
pressure bar: 1,9...2,4
bar: (1,7...2,6)
2nd speed 1/min: 900
Supply-pump
pressure bar: 5,4...5,9
bar: (5,2...6,1)
3rd speed 1/min: 1150
Supply-pump
pressure bar: 6,2...6,7
bar: (6,0...6,9)

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 55...98
quantity cm³/10s: (40...113)
2nd speed 1/min: 1150
Overflow : 55...98
quantity cm³/10s: (40...113)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1280
1000H.: -
2nd speed 1/min: 1200
Del.quantity cm³/: 29,0...35,0
1000H.: (28,0...36,0)
3rd speed 1/min: 1100
Del.quantity cm³/: 68,5...71,5
1000H.: (67,5...72,5)
4th speed 1/min: 800
Del.quantity cm³/: 71,5...72,5
1000H.: (70,5...73,5)
5th speed 1/min: 500
Del.quantity cm³/: 72,0...75,0
1000H.: (71,0...76,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1150
Del.quantity cm³/: -
1000H.: -

Idle delivery:

1st speed 1/min: 450
Del.quantity cm³/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 530
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 250-
2nd speed 1/min: 360

Mounting and assembly dimensions:

Angles:

Alpha ° : 25⁺4[°]
Beta ° : 46⁺8[°]
Gamma ° : 30⁻8[°]
Delta ° : 60⁺8[°]

Initial setting dimensions:

Dimension IV mm : 2,4
Governor-spring washer thickness
Dimension V mm : 24,65

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA 1,5 E
Edition : 11.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/10F2100 L353
Type number : 0 460 403 013

Customer-specific information
Customer : VM

Engine : HR 392 SHJ

TEST BENCH REQUIREMENTS

Calibrating oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,4
(from BDC): $\pm 0,02(0,04)$

Injection pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 2,1...2,5

Supply-pump pressure:

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value bar: 4,2...4,8

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del.quantity cm³/
1000H.: 65,0...66,0
Dispersion cm³/
1000H.: 3,0
1000H.: -

Full-load del. w/out charge press.:

Speed 1/min: 750
Del.quantity cm³/
1000H.: 46,1...47,1

Low-idle speed regulation:

Speed 1/min: 460
Charge press. hPa: -
Del.quantity cm³/
1000H.: 9,5...13,5

Full-load speed regulation:

Speed 1/min: 2300
Charge press. hPa: 1000
Del.quantity cm³/
1000H.: 34,0...40,0

Start:

Speed 1/min: 100
Charge press. hPa: -
Del.quantity : -
mind cm³/1000H.: 35,0

Load-dependent start of delivery:

Speed 1/min: 1500
Charge press. hPa: 1000

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 2,1...2,5
mm: (1,6...3,0)
2nd speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 3,9...4,7
mm: (3,6...5,0)
3rd speed 1/min: 1900
Charge press. hPa: 1000
TD travel mm: 5,4...6,2
mm: (5,1...6,5)
4th speed 1/min: 2100

Charge press. hPa: 1000
TD travel mm: 6,1...6,9
mm: (5,8...7,2)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: -
Supply-pump pressure bar: 2,3...2,9
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump pressure bar: 4,2...4,8
3rd speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump pressure bar: 7,9...8,5

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: -
Overflow quantity cm³/10s: 41...83
(26...98)
2nd speed 1/min: 2100
Charge press. hPa: 1000
Overflow quantity cm³/10s: 55...138
(40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750
Charge-air pressure-setting point hPa: 350
LDA stroke mm: -
Del.quantity cm³/: 55,5...56,5
1000H.: (53,5...58,5)
2nd speed 1/min: 2500
Charge press. hPa: 1000
Del.quantity cm³/: 0,0...6,0
1000H.: -
3rd speed 1/min: 2300
Charge press. hPa: 1000
Del.quantity cm³/: 34,0...40,0
1000H.: (33,0...41,0)
4th speed 1/min: 2100
Charge press. hPa: 1000
Del.quantity cm³/: 55,2...57,6
1000H.: (54,2...58,8)
5th speed 1/min: 1500
Charge press. hPa: 1000
Del.quantity cm³/: 65,0...66,0
1000H.: (63,5...67,5)
6th speed 1/min: 750
Charge press. hPa: 1000
Del.quantity cm³/: 60,5...63,5
1000H.: (59,5...64,5)
7th speed 1/min: 750
Charge press. hPa: -

Del.quantity cm³/: 46,1...47,1
1000H.: (44,1...48,1)
8th speed 1/min: 750
Charge press. hPa: 350
Del.quantity cm³/: 55,5...56,5
1000H.: (53,5...58,5)
9th speed 1/min: 600
Charge press. hPa: -
Del.quantity cm³/: 42,0...44,0
1000H.: (40,0...46,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 460
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 460
Del.quantity cm³/: 9,5...13,5
1000H.: (7,5...15,5)
2nd speed 1/min: 500
Del.quantity cm³/: 3,5...9,5
1000H.: (1,5...11,5)
3rd speed 1/min: 600
Del.quantity cm³/: 0,0...3,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 350
Charge press. hPa: -
Del.quantity cm³/: -
ind. 1000H: 42,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,6...6,0
MS	mm	: 0,6...1,0
XK	mm	: 20,0...22,0
XL	mm	: 9,9...13,3

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

Correction at adjusting nut (46)



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA 2,2 K
Edition : 11.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/10F1600 L352
Type number : 0 460 404 061

Customer-specific information
Customer : VM

Engine : HR 494

Power k: 53

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1200
Setting value mm: 1,9...2,3

Supply-pump pressure:

Speed 1/min: 1200
Setting value bar: 4,8...5,4

Full-load del. w/out charge press.:

Speed 1/min : 1200
Del.quantity cm³/
1000H.: 44,5...45,5
Dispersion cm³/
1000H.: -

Low-idle speed regulation:

Speed 1/min: 400
Del.quantity cm³/
1000H.: 11,5...15,5

Full-load speed regulation:

Speed 1/min: 1650
Del.quantity cm³/
1000H.: 27,0...33,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 45,0

Load-dependent start of delivery:

Speed 1/min: 1200

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
TD travel mm: 0,7...1,5
mm: (0,4...1,8)
2nd speed 1/min: 1200
TD travel mm: 1,9...2,3
mm: (1,4...2,8)
3rd speed 1/min: 1600
TD travel mm: 3,6...4,4
mm: (3,3...4,7)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 2,4...3,0
2nd speed 1/min: 1200
Supply-pump
pressure bar: 4,8...5,4
3rd speed 1/min: 1600
Supply-pump
pressure bar: 6,3...6,9

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1600
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1700
Del.quantity cm3/: 0,0...3,0
1000H.: -
2nd speed 1/min: 1650
Del.quantity cm3/: 27,0...33,0
1000H.: (24,0...36,0)
3rd speed 1/min: 1625
Del.quantity cm3/: 33,5...41,5
1000H.: -
4th speed 1/min: 1600
Del.quantity cm3/: 38,0...41,0
1000H.: (36,5...42,5)
5th speed 1/min: 1200
Del.quantity cm3/: 44,5...45,5
1000H.: (42,0...48,0)
6th speed 1/min: 600
Del.quantity cm3/: 43,5...46,5
1000H.: (42,0...48,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1600
Del.quantity cm3/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 400
ELAB volt: -
Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400
Del.quantity cm3/: 11,5...15,5
1000H.: (9,5...17,5)
2nd speed 1/min: 480
Del.quantity cm3/: 2,0...8,0
1000H.: (1,0...9,0)
3rd speed 1/min: 550
Del.quantity cm3/: 0,0...3,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 250
Del.quantity cm3/: -
ind. 1000H: 50,0

2nd speed 1/min: 450
Del.quantity cm3/: -
max. 1000H : 60,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : -
MS mm : 0,6...1,0
SVS max. mm : -
XK mm : 17,0...19,0
XL mm : 14,2...17,6

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 A
Edition : 09.05.89
replaces : 10.86
Calibrating oil : ISO 4113

Injection pump : VE 4/11F2000 R119
Type number : 0 460 414 007

Customer-specific information
Customer : FORD

Engine : YORK 84

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 023

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1400
Setting value mm: 3,2...3,6
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1400
Setting value bar: 5,7...6,5
KSB solenoid-operated
valve volt: 12,0

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 33,5...34,5 F
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 3,5
1000H.: (3,5)

Low-idle speed regulation:

Speed 1/min: 415
Del.quantity cm3/
1000H.: 9,0...11,0
KSB solenoid-operated
valve volt: 12,0

Full-load speed regulation:

Speed 1/min: 2200
Del.quantity cm3/
1000H.: 17,5...19,5
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 80,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 3,9...4,1 A
mm: -

2nd speed 1/min: 1250
TD travel mm: 4,5...6,5 B
mm: -

3rd speed 1/min: 1000
TD travel mm: 0,9...1,7
mm: (0,6...2,0)

KSB solenoid-operated
valve volt: 12,0

4th speed 1/min: 1200
TD travel mm: 1,8...2,6
mm: (1,5...2,9)

KSB solenoid-operated
valve volt: 12,0

5th speed 1/min: 1400

TD travel mm: 3,2...3,6
mm: (2,7...4,1)

KSB solenoid-operated
valve volt: 12,0

6th speed 1/min: 1650

TD travel mm: 4,7...4,9
mm: (4,6...5,0)

KSB solenoid-operated
valve volt: 12,0

1st speed 1/min: 1900

TD travel mm: 6,9...8,1
mm: (6,8...8,2)

Overflow quantity at overflow valve:

1st speed 1/min: 500

KSB solenoid-operated
valve volt: 12,0

Overflow : 41...83

quantity cm3/10s: (26...98)

2nd speed 1/min: 2000

KSB solenoid-operated
valve volt: 12,0

Overflow : 55...138

quantity cm3/10s: (40...153)

Delivery quant. and breakaway char.:

1st speed 1/min: 1950

HBA stroke mm: 10,0

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm3/: 40,0...42,0 D
1000H.: (38,4...43,6) D

2nd speed 1/min: 2350

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm3/: 0,0...8,0
1000H.: -

3rd speed 1/min: 2200

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm3/: 17,5...19,5
1000H.: (14,0...23,0)

4th speed 1/min: 1000

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm3/: 39,5...40,5 E
1000H.: (37,4...42,6) E

5th speed 1/min: 500

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm3/: 33,5...36,5 F
1000H.: (31,6...38,4) F

Zero delivery (stop):

Electr. shutoff:

LO6

Speed 1/min: 415

ELAB volt: -

Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 415

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm3/: 9,0...11,0
1000H.: (5,5...14,5)

2nd speed 1/min: 500

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm3/: 3,0...8,0
1000H.: (1,0...10,0)

Automatic starting fuel delivery:

1st speed 1/min: 300

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm3/: -
ind. 1000H: 40,0

2nd speed 1/min: 480

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm3/: -
max. 1000H : 38,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4

KF mm : K-OT

MS mm : 1,7...1,9

SVS max. mm : 4,7

XK mm : 18,0...20,0

XL mm : 10,4...13,8

Remarks:

Difference in supply pump pressure
between 1900 min. -1 and
1000 min. -1 = 2.4...2.8 bar.

Pump/engine assignment:

Attach timing-device cover KDEP 1151.

Plunger lift in blocking position =
0.71...

0.75 mm referenced to outlet "A".

Unscrew KSB ball valve 2 mm

F = Adjustment point for low full-load delivery

E = Fuel-delivery adjustment point in HBA range. (Correction by way of HBA adjusting screw).

D = Adjustment point for high full-load delivery

A = KSB adjustment point

B = KSB curve point

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 A1
Edition : 09.05.89
replaces : 10.86
Calibrating oil : ISO 4113

Injection pump : VE 4/11F2000 R119-1
Type number : 0 460 414 018

Customer-specific information
Customer : FORD

Engine : YORK 84

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 023

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1400
Setting value mm: 3,2...3,6
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1400
Setting value bar: 5,7...6,5
KSB solenoid-operated
valve volt: 12,0

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 33,5...34,5 F
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 3,5
1000H.: (3,5)

Low-idle speed regulation:

Speed 1/min: 415
Del.quantity cm3/
1000H.: 9,0...11,0
KSB solenoid-operated
valve volt: 12,0

Full-load speed regulation:

Speed 1/min: 2200
Del.quantity cm3/
1000H.: 17,5...19,5
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 80,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 3,9...4,1 A
mm: -

2nd speed 1/min: 1250
TD travel mm: 4,5...6,5 B
mm: -

3rd speed 1/min: 1000
TD travel mm: 0,9...1,7
mm: (0,6...2,0)

KSB solenoid-operated
valve volt: 12,0

4th speed 1/min: 1200
TD travel mm: 1,8...2,6
mm: (1,5...2,9)

KSB solenoid-operated
valve volt: 12,0

5th speed 1/min: 1400

TD travel mm: 3,2...3,6
mm: (2,7...4,1)

KSB solenoid-operated
valve volt: 12,0

6th speed 1/min: 1650

TD travel mm: 4,7...4,9
mm: (4,6...5,0)

KSB solenoid-operated
valve volt: 12,0

1st speed 1/min: 1900

TD travel mm: 6,9...8,1
mm: (6,8...8,2)

Overflow quantity at overflow valve:

1st speed 1/min: 500

KSB solenoid-operated
valve volt: 12,0

Overflow : 41...83
quantity cm³/10s: (26...98)

2nd speed 1/min: 2000

KSB solenoid-operated
valve volt: 12,0

Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950

HBA stroke mm: 10,0

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 40,0...42,0 D
1000H.: (38,4...43,6) D

2nd speed 1/min: 2350

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 0,0...8,0
1000H.: -

3rd speed 1/min: 2200

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 17,5...19,5
1000H.: (14,0...23,0)

4th speed 1/min: 1000

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 39,5...40,5 E
1000H.: (37,4...42,6) E

5th speed 1/min: 500

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 33,5...36,5 F
1000H.: (31,6...38,4) F

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 415

ELAB volt: -

Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 415

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 9,0...11,0
1000H.: (5,5...14,5)

2nd speed 1/min: 500

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 3,0...8,0
1000H.: (1,0...10,0)

Automatic starting fuel delivery:

1st speed 1/min: 300

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: -
ind. 1000H: 40,0

2nd speed 1/min: 480

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: -
max. 1000H : 38,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4

KF mm : K-OT

MS mm : 1,7...1,9

SVS max. mm : 4,7

XK mm : 18,0...20,0

XL mm : 10,4...13,8

Remarks:

Difference in supply pump pressure
between 1900 min. -1 and
1000 min. -1 = 2.4...2.8 bar.

Pump/engine assignment:

Attach timing-device cover KDEP 1151.

Plunger lift in blocking position =
0.71...

0.75 mm referenced to outlet "A".

Unscrew KSB ball valve 2 mm

F = Adjustment point for low full-load delivery

E = Fuel-delivery adjustment point in HBA range. (Correction by way of HBA adjusting screw).

D = Adjustment point for high full-load delivery

A = KSB adjustment point

B = KSB curve point

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 2,0 A
Edition : 09.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/11F2250 R228
Type number : 0 460 414 029

Customer-specific information
Customer : PERKINS

Engine : 4.20

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Start of delivery block
Piston stroke mm: 1,37
mm: $\pm 0,02(0,06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1800
Setting value mm: 3,1...3,5
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1800
Setting value bar: 6,2...6,8
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 500
Del.quantity cm³/
1000H.: 19,0...20,0 F
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ : 4,0
1000H : -

Low-idle speed regulation:

Speed 1/min: 400
Del.quantity cm³/
1000H.: 8,0...10,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ : 3,0
1000H.: -

Full-load speed regulation:

Speed 1/min: 2500
Del.quantity cm³/
1000H.: 23,5...25,5
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 2,2...2,4 A
mm: (1,5...3,1) A
KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1200
TD travel mm: 2,1...4,1 B
mm: (1,9...4,3) B
KSB solenoid-operated
valve volt: -
3rd speed 1/min: 1500
TD travel mm: 1,5...2,3
mm: (1,2...2,6)

KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1800
TD travel mm: 3,1...3,5
mm: (2,6...4,0)

KSB solenoid-operated
valve volt: 12,0
5th speed 1/min: 2250
TD travel mm: 4,9...5,7
mm: (4,6...6,0)

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 1000
Supply-pump
pressure bar: 4,3...4,9

KSB solenoid-operated
valve volt: 12,0

2nd speed 1/min: 1800

Supply-pump
pressure bar: 6,2...6,8

KSB solenoid-operated
valve volt: 12,0

3rd speed 1/min: 2250

Supply-pump
pressure bar: 7,4...8,0

KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 500
KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)

2nd speed 1/min: 2250
KSB solenoid-operated
valve volt: 12,0

Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2250
HBA stroke mm: 10,4
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 57,5...62,5 D
1000H.: (57,4...62,6) D

2nd speed 1/min: 2600
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...15,0
1000H.: -

3rd speed 1/min: 2500
KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 23,5...25,5
1000H.: (20,0...29,0)

4th speed 1/min: 2250

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 57,5...62,5 D
1000H.: (57,4...62,6) D

5th speed 1/min: 1000

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 42,8...43,8 E
1000H.: (40,7...45,9) E

6th speed 1/min: 500

KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 19,0...20,0 F
1000H.: (16,9...22,1) F

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 8,0...10,0
1000H.: (4,5...13,5)
2nd speed 1/min: 500
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 1,0...7,0
1000H.: (0,0...8,5)

Automatic starting fuel delivery:

2nd speed 1/min: 300
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
max. 1000H.: 40,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4

KF	mm	: K-OT
MS	mm	: 1,1...1,5
SVS max.	mm	: 6,0
XK	mm	: 20,0...22,0
XL	mm	: 10,4...13,8

Remarks:

A = KSB adjustment point
B = KSB curve point

F = Adjustment point for low full-load
delivery
E = Fuel-delivery adjustment point in
HBA range. (Correction by way of HBA
adjusting screw).
D = Adjustment point for high full-
load delivery

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 2,0 B
Edition : 09.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/11F2250 R229
Type number : 0 460 414 030

Customer-specific information
Customer : PERKINS

Engine : T 4.20

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Start of delivery block
Piston stroke mm : 1,00
mm : $\pm 0,02(0,06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 3,0...3,4
KSB solenoid-operated
valve volt: -

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 800
Setting value bar: 7,1...7,7
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 800
Del.quantity cm³/
1000H.: 66,5...67,5
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ : 4,0
1000H : -

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm³/
1000H.: 17,0...18,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ : 4,0
1000H.: -

Low-idle speed regulation:

Speed 1/min: 400
Charge press. hPa: -
Del.quantity cm³/
1000H.: 10,0...12,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ : 3,0
1000H.: (4,0)

Full-load speed regulation:

Speed 1/min: 2500
Charge press. hPa: 800
Del.quantity cm³/
1000H.: 23,5...25,5
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : 60,0...100,0
mind cm³/1000H.: -
KSB solenoid-operated
valve volt: 12,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
Charge press. hPa: 800
TD travel mm: 1,8...2,0 A
mm: (1,1...2,7) A

KSB solenoid-operated
valve volt: -
2nd speed 1/min: 800
Charge press. hPa: 800
TD travel mm: 1,0...3,0 B
mm: (0,8...3,2) B

KSB solenoid-operated
valve volt: -
3rd speed 1/min: 1000
Charge press. hPa: 800
TD travel mm: 0,6...1,4
mm: (0,3...1,7)

KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1500
Charge press. hPa: 800
TD travel mm: 3,0...3,4
mm: (2,6...3,8)

KSB solenoid-operated
valve volt: 12,0
5th speed 1/min: 2000
Charge press. hPa: 800
TD travel mm: 5,8...6,6
mm: (5,5...6,9)

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 1000
Charge press. hPa: 800
Supply-pump
pressure bar: 6,1...6,7

KSB solenoid-operated
valve volt: 12,0

2nd speed 1/min: 1500
Charge press. hPa: 800

Supply-pump
pressure bar: 7,1...7,7

KSB solenoid-operated
valve volt: 12,0

3rd speed 1/min: 2000
Charge press. hPa: 800

Supply-pump
pressure bar: 8,1...8,7

KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 800

KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2250
Charge press. hPa: 800
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (26...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
Charge-air pressure-setting
point hPa: 300
LDA stroke mm: 6,5
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 34,7...35,7
1000H.: (31,7...38,7)

2nd speed 1/min: 2600
Charge press. hPa: 800
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...10,0
1000H.: -

3rd speed 1/min: 2500
Charge press. hPa: 800
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 23,5...25,5
1000H.: (20,5...28,5)

4th speed 1/min: 2250
Charge press. hPa: 800
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 69,0...73,0
1000H.: (68,0...74,0)

5th speed 1/min: 1250
Charge press. hPa: 800
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 66,5...67,5
1000H.: (64,5...69,5)

6th speed 1/min: 800
Charge press. hPa: 300
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 34,7...35,7
1000H.: (31,7...38,7)

7th speed 1/min: 500
Charge press. hPa: 800
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 59,5...65,5
1000H.: -

8th speed 1/min: 500
KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 17,0...18,0
1000H: (14,5...20,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 10,0...12,0
1000H.: (7,0...15,0)
2nd speed 1/min: 500
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 2,0...8,0
1000H.: (1,0...9,0)

Automatic starting fuel delivery:

2nd speed 1/min: 300
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
max. 1000H.: 30,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: K-OT
MS	mm	: 0,35.0,75
SVS max.	mm	: 4,3
XK	mm	: 20,0...22,0
XL	mm	: 9,6...13,0

Remarks:

A = KSB adjustment point
B = KSB curve point

Unscrew KSB ball valve 2 mm

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 B
Edition : 12.05.89
replaces : 13.01.89
Calibrating oil : ISO 4113

Injection pump : VE 4/11F2000 R288
Type number : 0 460 414 051

Customer-specific information
Customer : FORD

Engine : 2,5 DI

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 023

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Start of delivery block
Piston stroke mm: 0,78
mm: 0,73...0,83

Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250
Setting value mm: 2,5...2,9

Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 30,5...31,5 F

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm3/
1000H.: 14,0...18,0

Full-load speed regulation:

Speed 1/min: 2100
Del.quantity cm3/
1000H: 29,5...33,5

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 62,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 0,0...0,8
mm: (0,0...1,1)
2nd speed 1/min: 1250
TD travel mm: 2,5...2,9
mm: (2,2...3,2)
3rd speed 1/min: 1950
TD travel mm: 6,0...6,8
mm: (5,7...7,1)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3,1...3,7
2nd speed 1/min: 1000
Supply-pump
pressure bar: 4,8...5,4
3rd speed 1/min: 1250
Supply-pump
pressure bar: 5,6...6,2
4th speed 1/min: 1950
Supply-pump
pressure bar: 7,7...8,3

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1950
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery quant. and breakaway char.:

1st speed 1/min: 1950
HBA stroke mm: 10,0
Del.quantity cm³/: 37,0...40,6 D
1000H.: (36,3...41,3) D
2nd speed 1/min: 2350
Del.quantity cm³/: 0,0...10,0
1000H.: -
3rd speed 1/min: 2200
Del.quantity cm³/: 17,0...25,0
1000H.: (15,0...27,0)
4th speed 1/min: 2100
Del.quantity cm³/: 29,5...33,5
1000H.: (26,5...36,5)
5th speed 1/min: 1950
Del.quantity cm³/: 37,0...40,6
1000H.: (36,3...41,3)
6th speed 1/min: 1700
Del.quantity cm³/: 36,7...40,3
1000H.: (36,0...41,0)
7th speed 1/min: 1000
Del.quantity cm³/: 33,8...34,8 E
1000H.: (31,8...36,8) E
8th speed 1/min: 500
Del.quantity cm³/: 30,5...31,5 F
1000H.: (26,0...36,0) F

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 425
Del.quantity cm³/: 14,0...18,0
1000H.: (12,0...20,0)
2nd speed 1/min: 500
Del.quantity cm³/: 7,5...15,5
1000H.: (5,5...17,5)

Automatic starting fuel delivery:

1st speed 1/min: 300

Del.quantity cm³/: -
ind. 1000H: 30,0

2nd speed 1/min: 480
Del.quantity cm³/: -
max. 1000H : 34,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : K-OT
MS mm : 1,3...1,7
SVS max. mm : 3,8
XK mm : 17,0...19,0
XL mm : 10,9...14,5

Remarks:

Pump/engine assignment:
Stroke in blocking position 0.73...
0.83 mm, referenced to outlet "B".
Attach timing-device cover
KDEP 1151.

F = Adjustment point for low full-load
delivery

E = Fuel-delivery adjustment point in
HBA range. (Correction by way of HBA
adjusting screw).

D = Adjustment point for high full-
load delivery

Adjust part-load delivery:
Setting = 12.0 mm

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 C
Edition : 12.05.89
replaces : 13.01.89
Calibrating oil : ISO 4113

Injection pump : VE 4/11F2000 R288-1
Type number : 0 460 414 052

Customer-specific information
Customer : FORD

Engine : 2,5 DI

TEST BENCH REQUIREMENTS

Calibrating oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 023

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC) : -

Start of delivery block
Piston stroke mm : 0,78
mm : 0,73...0,83
Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250
Setting value mm: 2,5...2,9

Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 30,5...31,5 F

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm3/
1000H.: 16,0...20,0

Full-load speed regulation:

Speed 1/min: 2100
Del.quantity cm3/
1000H.: 30,5...34,5
Dispersion cm3/: 3,0
1000H.: (4,0)

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 62,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 0,0...0,8
mm: (0,0...1,1)
2nd speed 1/min: 1250
TD travel mm: 2,5...2,9
mm: (2,2...3,2)
3rd speed 1/min: 1950
TD travel mm: 6,0...6,8
mm: (5,7...7,1)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3,1...3,7
2nd speed 1/min: 1000
Supply-pump
pressure bar: 4,8...5,4
3rd speed 1/min: 1250
Supply-pump
pressure bar: 5,6...6,2
4th speed 1/min: 1950

Supply-pump
pressure bar: 7,7...8,3

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1950
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950
HBA stroke mm: 10,0
Del.quantity cm³/: 37,0...40,6 D
1000H.: (36,3...41,3) D
2nd speed 1/min: 2350
Del.quantity cm³/: 0,0...10,0
1000H.: -
3rd speed 1/min: 2200
Del.quantity cm³/: 17,0...25,0
1000H.: (15,0...27,0)
4th speed 1/min: 2100
Del.quantity cm³/: 30,5...34,5
1000H.: (27,5...37,5)
5th speed 1/min: 1950
Del.quantity cm³/: 37,0...40,6
1000H.: (36,3...41,3)
6th speed 1/min: 1700
Del.quantity cm³/: 37,7...41,3
1000H.: (37,0...42,0)
7th speed 1/min: 1000
Del.quantity cm³/: 34,8...35,8 E
1000H.: (32,8...37,8) E
8th speed 1/min: 500
Del.quantity cm³/: 30,5...31,5 F
1000H.: (26,0...36,0) F

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 425
Del.quantity cm³/: 16,0...20,0
1000H.: (14,0...22,0)
2nd speed 1/min: 500
Del.quantity cm³/: 7,5...15,5
1000H.: (5,5...17,5)

Arrangement of drivers on engine-

L20

speed lever for exhaust-gas-
recirculation valve linkage (guage)

1st speed 1/min: 1250
Del.quantity cm³/: 23,0...24,0
1000H.: (21,0...26,0)

Automatic starting fuel delivery:

1st speed 1/min: 300
Del.quantity cm³/: -
ind. 1000H: 30,0

2nd speed 1/min: 480
Del.quantity cm³/: -
max. 1000H : 34,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: K-OT
MS	mm	: 1,3...1,7
SVS max.	mm	: 3,8
XK	mm	: 17,0...19,0
XL	mm	: 10,9...14,5

Remarks:

Pump/engine assignment:
Stroke in blocking position 0.73...
0.83 mm, referenced to outlet "B".
Attach timing-device cover
KDEP 1151.

F = Adjustment point for low full-load
delivery

E = Fuel-delivery adjustment point in
HBA range. (Correction by way of HBA
adjusting screw).

D = Adjustment point for high full-
load delivery

Adjust part-load delivery:
Setting = 12.0 mm

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 E
Edition : 12.05.89
replaces : 13.01.89
Calibrating oil : ISO 4113

Injection pump : VE 4/11F2000 R288-3
Type number : 0 460 414 062

Customer-specific information
Customer : FORD

Engine : 2,5 DI

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 023

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Start of delivery block
Piston stroke mm: 0,78
mm: 0,73...0,83

Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250
Setting value mm: 2,5...2,9

Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 30,5...31,5 F

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm3/
1000H.: 14,0...18,0

Full-load speed regulation:

Speed 1/min: 2100
Del.quantity cm3/
1000H.: 29,5...33,5
Dispersion cm3/: 3,0
1000H.: (4,0)

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 62,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 0,0...0,8
mm: (0,0...1,1)
2nd speed 1/min: 1250
TD travel mm: 2,5...2,9
mm: (2,2...3,1)
3rd speed 1/min: 1950
TD travel mm: 6,0...6,8
mm: (5,7...7,1)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3,1...3,7
2nd speed 1/min: 1000
Supply-pump
pressure bar: 4,8...5,4
3rd speed 1/min: 1250
Supply-pump
pressure bar: 5,6...6,2
4th speed 1/min: 1950

Supply-pump
pressure bar: 7,7...8,3

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1950
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950
HBA stroke mm: 10,0
Del.quantity cm³/: 37,0...40,6 D
1000H.: (36,3...41,3) D
2nd speed 1/min: 2350
Del.quantity cm³/: 0,0...10,0
1000H.: -
3rd speed 1/min: 2200
Del.quantity cm³/: 17,0...25,0
1000H.: (15,0...27,0)
4th speed 1/min: 2100
Del.quantity cm³/: 29,5...33,5
1000H.: (26,5...36,5)
5th speed 1/min: 1950
Del.quantity cm³/: 37,0...40,6
1000H.: (36,3...41,3)
6th speed 1/min: 1700
Del.quantity cm³/: 36,7...40,3
1000H.: (36,0...41,0)
7th speed 1/min: 1000
Del.quantity cm³/: 33,8...34,8 E
1000H.: (31,8...36,8) E
8th speed 1/min: 500
Del.quantity cm³/: 30,5...31,5 F
1000H.: (26,0...36,0) F

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 425
Del.quantity cm³/: 14,0...18,0
1000H.: (12,0...20,0)
2nd speed 1/min: 500
Del.quantity cm³/: 7,5...15,5
1000H.: (5,5...17,5)

Arrangement of drivers on engine-

speed lever for exhaust-gas-
recirculation valve linkage (guage)

1st speed 1/min: 1250
Del.quantity cm³/: 23,0...24,0
1000H.: (21,0...26,0)

Automatic starting fuel delivery:

1st speed 1/min: 300
Del.quantity cm³/: -
ind. 1000H.: 30,0

2nd speed 1/min: 480
Del.quantity cm³/: -
max. 1000H.: 34,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : K-OT
MS mm : 1,3...1,7
SVS max. mm : 3,8
XK mm : 17,0...19,0
XL mm : 10,9...14,5

Remarks:

F = Adjustment point for low full-load
delivery

E = Fuel-delivery adjustment point in
HBA range. (Correction by way of HBA
adjusting screw).

D = Adjustment point for high full-
load delivery

Adjust part-load delivery:
Setting = 12.0 mm

Pump/engine assignment:
Stroke in blocking position 0.73...
0.83 mm, referenced to outlet "B".
Attach timing-device cover
KDEP 1151.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF 2,5 P1
Edition : 10.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/11F2000 R342
Type number : 0 460 414 067

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8140.07.2700

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : 0,3
(from BDC): +0,02(0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100
Setting value mm: 3,1...3,5

Supply-pump pressure:

Speed 1/min: 1100
Setting value bar: 5,7...6,3

Full-load del. w/out charge press.:

Speed 1/min: 525
Del.quantity cm3/
1000H.: 27,0...28,0

Low-idle speed regulation:

Speed 1/min: 350
Del.quantity cm3/
1000H.: 10,5...14,5

Full-load speed regulation:

Speed 1/min: 2300
Del.quantity cm3/
1000H.: 18,0...22,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 40,0

Load-dependent start of delivery:

Speed 1/min: 1100

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600
TD travel mm: 0,6...1,4
mm: (0,4...1,6)
2nd speed 1/min: 1100
TD travel mm: 3,1...3,5
mm: (2,7...3,9)
3rd speed 1/min: 1500
TD travel mm: 4,1...4,9
mm: (3,8...5,0)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 4,1...4,7
2nd speed 1/min: 1100
Supply-pump
pressure bar: 5,7...6,3
3rd speed 1/min: 1500
Supply-pump
pressure bar: 6,9...7,5

Overflow quantity at overflow valve:

1st speed 1/min: 525

Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2000
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery quant. and breakaway char.:

1st speed 1/min: 2450
Del.quantity cm³/: 0,0...5,0
1000H.: -
2nd speed 1/min: 2300
Del.quantity cm³/: 18,0...22,0
1000H.: (15,5...24,5)
3rd speed 1/min: 2200
Del.quantity cm³/: 32,0...40,0
1000H.: (31,5...40,5)
4th speed 1/min: 2000
Del.quantity cm³/: 48,0...53,0
1000H.: (46,5...54,5)
5th speed 1/min: 1500
Del.quantity cm³/: 53,2...58,2
1000H.: (51,7...59,7)
6th speed 1/min: 1100
Del.quantity cm³/: 54,0...55,0
1000H.: (52,0...56,0)
7th speed 1/min: 525
Del.quantity cm³/: 27,0...28,0
1000H.: (25,0...30,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 350
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350
Del.quantity cm³/: 10,5...14,5
1000H.: (8,5...16,5)
2nd speed 1/min: 300
Del.quantity cm³/: 27,0...35,0
1000H.: (26,0...36,0)
3rd speed 1/min: 400
Del.quantity cm³/: 0,0...5,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 350
Del.quantity cm³/: -
ind. 1000H.: 40,0
2nd speed 1/min: 450

Del.quantity cm³/: -
max. 1000H.: 40,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : -
KF mm : K-OT
MS mm : 0,8...1,2
SVS max. mm : 3,5

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 A
Edition : 17.05.89
replaces : 10.84
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R123
Type number : 0 460 424 006

Customer-specific information
Customer : CDC

Engine : 4 T.390

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 016

Opening
pressure bar : 207...210

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm : 2,00
mm : $\pm 0,02(0,06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Setting value mm: 2,3...2,7

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 4,5...5,1

Full-load del. w/out charge press.:

Speed 1/min : 1100
Del.quantity cm³/
1000H.: 85,0...86,0
Dispersion cm³/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm³/
1000H.: 18,5...24,5
Dispersion cm³/: 3,5
1000H.: (4,5)

Full-load speed regulation:

Speed 1/min: 1340
Del.quantity cm³/
1000H: 24,5...32,5

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 97,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 1,1...1,9
mm: (0,8...2,2)
2nd speed 1/min: 900
TD travel mm: 2,3...2,7
mm: (1,8...3,2)
3rd speed 1/min: 1100
TD travel mm: 3,2...4,0
mm: (2,9...4,3)
4th speed 1/min: 1250
TD travel mm: 3,7...4,5
mm: (3,4...4,8)

Supply-pump pressure characteristic:

1st speed 1/min: 400
Supply-pump
pressure bar: 2,3...2,9
2nd speed 1/min: 750

Supply-pump
pressure bar: 3,8...4,4
3rd speed 1/min: 900
Supply-pump
pressure bar: 4,5...5,1
4th speed 1/min: 1100
Supply-pump
pressure bar: 5,3...5,9

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1250
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1400
Del.quantity cm3/: 0,0...1,0
1000H.: -
2nd speed 1/min: 1340
Del.quantity cm3/: 24,5...32,5
1000H.: (23,5...33,5)
3rd speed 1/min: 1250
Del.quantity cm3/: 80,0...83,0
1000H.: (78,5...84,5)
4th speed 1/min: 1100
Del.quantity cm3/: 85,0...86,0
1000H.: (82,5...88,5)
5th speed 1/min: 750
Del.quantity cm3/: 88,5...92,5
1000H.: (86,7...94,3)
6th speed 1/min: 600
Del.quantity cm3/: 88,5...92,5
1000H.: (86,7...94,3)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del.quantity cm3/: -
max. 1000H.: -

Idle delivery: -

1st speed 1/min: 375
Del.quantity cm3/: 18,5...24,5
1000H.: (16,5...26,5)
2nd speed 1/min: 450
Del.quantity cm3/: 0,0...1,5
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm3/: -
ind. 1000H: 97,0

2nd speed 1/min: 200
Del.quantity cm3/: -
max. 1000H : 85,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : -
KF mm : 5,0...5,4
MS mm : 1,3...1,7
SVS max. mm : 3,7
XK mm : 20,2...22,2
XL mm : 13,2...16,5

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 03
Edition : 16.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R239
Type number : 0 460 424 030

Customer-specific information
Customer : CDC

Engine : 4 BTA

Power k: 88
Speed 1/mi: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm: 1,95
mm: $\pm 0,02(0,06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 2,0...2,4

Supply-pump pressure:

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value bar: 5,6...6,2

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 76,0...77,0
Dispersion cm3/ : 4,0
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 56,0...57,0

Low-idle speed regulation:

Speed 1/min: 375
Charge press. hPa: -
Del.quantity cm3/
1000H.: 10,0...12,0
Dispersion cm3/: 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1360
Charge press. hPa: 1000
Del.quantity cm3/
1000H: 60,0...66,0

Start:

Speed 1/min: 100
Charge press. hPa: -
Del.quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 850
Charge press. hPa: 1000
TD travel mm: 0,6...1,4
mm: (0,3...1,7)
2nd speed 1/min: 1100

Charge press. hPa: 1000
 TD travel mm: 2,0...2,4
 mm: (1,5...2,9)
 3rd speed 1/min: 1250
 Charge press. hPa: 1000
 TD travel mm: 2,6...3,4
 mm: (2,3...3,7)

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Charge press. hPa: 1000
 Supply-pump pressure bar: 3,0...3,6
 2nd speed 1/min: 850
 Charge press. hPa: 1000
 Supply-pump pressure bar: 4,6...5,2
 3rd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump pressure bar: 5,6...6,2
 4th speed 1/min: 1250
 Charge press. hPa: 1000
 Supply-pump pressure bar: 6,2...6,8

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Charge press. hPa: -
 Overflow : 41...83
 quantity cm³/10s: (26...98)
 2nd speed 1/min: 1250
 Charge press. hPa: 1000
 Overflow : 55...138
 quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
 Charge-air pressure-setting point hPa: 450
 LDA stroke mm: 6,5
 Del.quantity cm³/: 72,0...73,0
 1000H.: (68,5...76,5)
 2nd speed 1/min: 1550
 Charge press. hPa: 1000
 Del.quantity cm³/: 0,0...3,0
 1000H.: -
 3rd speed 1/min: 1510
 Charge press. hPa: 1000
 Del.quantity cm³/: 0,0...15,0
 1000H.: -
 4th speed 1/min: 1470
 Charge press. hPa: 1000
 Del.quantity cm³/: 15,0...55,0
 1000H.: -
 5th speed 1/min: 1360
 Charge press. hPa: 1000

Del.quantity cm³/: 60,0...66,0
 1000H.: 57,0...70,0)
 6th speed 1/min: 1250
 Charge press. hPa: 1000
 Del.quantity cm³/: 73,5...76,5
 1000H.: (72,0...78,0)
 7th speed 1/min: 1100
 Charge press. hPa: 1000
 Del.quantity cm³/: 75,5...78,5
 1000H.: (73,5...80,5)
 8th speed 1/min: 850
 Charge press. hPa: 1000
 Del.quantity cm³/: 76,0...77,0
 1000H.: (73,5...79,5)
 9th speed 1/min: 700
 Charge press. hPa: 450
 Del.quantity cm³/: 72,0...73,0
 1000H.: (68,5...76,5)
 10th speed 1/min: 500
 Charge press. hPa: 1000
 Del.quantity cm³/: 89,5...99,5
 1000H.: -
 11th speed 1/min: 500
 Charge press. hPa: -
 Del.quantity cm³/: 56,0...57,0
 1000H.: (52,5...60,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1400
 Del.quantity cm³/: 0...3
 1000H.: -

Electr. shutoff:

Speed 1/min: 400
 ELAB volt: -
 Del.quantity cm³/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
 Del.quantity cm³/: 10,0...12,0
 1000H.: (6,0...16,0)
 2nd speed 1/min: 450
 Del.quantity cm³/: 0,0...4,0
 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 250
 Charge press. hPa: -
 Del.quantity cm³/: -
 ind. 1000H.: 90,0
 2nd speed 1/min: 350
 Charge press. hPa: -

Del. quantity cm³/: -
max. 1000H : 90,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: K-OT
MS	mm	: 1,0...1,4
SVS max.	mm	: 2,3

Remarks:

Operate control lever after each
manifold-pressure compensator pressure
change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N18
Edition : 16.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R301
Type number : 0 460 424 041
Customer Part-No. : 3 911 241

Customer-specific information
Customer : CDC

Engine : 4 BTA 3,9

Power k: 88
Speed 1/mi: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm: 1,25
mm: $\pm 0,02(0,06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100
Charge press. hPa: 1100
Setting value mm: 0,8...1,2
KSB solenoid-operated
valve volt: 24,0

Supply-pump pressure:

Speed 1/min: 850
Charge press. hPa: 1100
Setting value bar: 4,5...5,1
KSB solenoid-operated
valve volt: 24,0

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1100
Del.quantity cm3/
1000H.: 84,5...85,5
KSB solenoid-operated
valve volt : 24,0
Dispersion cm3/ : 4,0
1000H. : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 550
Del.quantity cm3/
1000H.: 56,5...57,5

Low-idle speed regulation:

Speed 1/min: 375
Charge press. hPa: -
Del.quantity cm3/
1000H.: 9,0...13,0
KSB solenoid-operated
valve volt: 24,0
Dispersion cm3/: 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340
Charge press. hPa: 1100
Del.quantity cm3/
1000H: 62,0...68,0
KSB solenoid-operated
valve volt: 24,0

Start:

Speed 1/min: 100
Charge press. hPa: -
Del.quantity : -
mind cm3/1000H.: 70,0

KSB solenoid-operated
valve volt: 24,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
Charge press. hPa: -
TD travel mm: 2,5...3,5
mm: -
KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1000
Charge press. hPa: 1100
TD travel mm: 0,2...1,0
mm: (0,0...1,3)
KSB solenoid-operated
valve volt: 24,0
3rd speed 1/min: 1100
Charge press. hPa: 1100
TD travel mm: 0,8...1,2
mm: (0,3...1,7)
KSB solenoid-operated
valve volt: 24,0
4th speed 1/min: 1250
Charge press. hPa: 1100
TD travel mm: 1,4...2,2
mm: (1,1...2,5)
KSB solenoid-operated
valve volt: 24,0

Supply-pump pressure characteristic:

1st speed 1/min: 550
Charge press. hPa: 1100
Supply-pump
pressure bar: 2,9...3,5
KSB solenoid-operated
valve volt: 24,0
2nd speed 1/min: 850
Charge press. hPa: 1100
Supply-pump
pressure bar: 4,5...5,1
KSB solenoid-operated
valve volt: 24,0
3rd speed 1/min: 1100
Charge press. hPa: 1100
Supply-pump
pressure bar: 5,5...6,1
KSB solenoid-operated
valve volt: 24,0
4th speed 1/min: 1250
Charge press. hPa: 1100
Supply-pump
pressure bar: 6,1...6,7
KSB solenoid-operated
valve volt: 24,0

Overflow quantity at overflow valve:

1st speed 1/min: 550
Charge press. hPa: -
KSB solenoid-operated
valve volt: 24,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1250
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 24,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 600
LDA stroke mm: 6,5
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 73,5...74,5
1000H.: (70,0...78,0)
2nd speed 1/min: 1550
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 0,0...3,0
1000H.: -
3rd speed 1/min: 1480
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 0,0...15,0
1000H.: -
4th speed 1/min: 1430
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 15,0...55,0
1000H.: -
5th speed 1/min: 1340
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 62,0...68,0
1000H.: (59,0...71,0)
6th speed 1/min: 1250
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 79,0...82,0
1000H.: (77,5...83,5)
7th speed 1/min: 1100
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 24,0

Del. quantity cm³/: 81,5...84,5
 1000H.: (79,5...86,5)
 8th speed 1/min: 850
 Charge press. hPa: 1100
 KSB solenoid-operated
 valve volt: 24,0
 Del. quantity cm³/: 84,5...85,5
 1000H.: (82,0...88,0)
 9th speed 1/min: 700
 Charge press. hPa: 600
 KSB solenoid-operated
 valve volt: 24,0
 Del. quantity cm³/: 73,5...74,5
 1000H.: (70,0...78,0)
 10th speed 1/min: 550
 Charge press. hPa: 1100
 KSB solenoid-operated
 valve volt: 24,0
 Del. quantity cm³/: 97,0...105,0
 1000H.: -
 11th speed 1/min: 550
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 24,0
 Del. quantity cm³/: 56,5...57,5
 1000H.: (53,0...61,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
 Del. quantity cm³/: 0...3
 1000H.: -

Electr. shutoff:

Speed 1/min: 375
 ELAB volt: -
 Del. quantity cm³/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
 KSB solenoid-operated
 valve volt: 24,0
 Del. quantity cm³/: 9,0...13,0
 1000H.: (6,0...16,0)
 2nd speed 1/min: 450
 KSB solenoid-operated
 valve volt: 24,0
 Del. quantity cm³/: 0,0...4,0
 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 240
 Charge press. hPa: -

KSB solenoid-operated
 valve volt: 24,0
 Del. quantity cm³/: -
 ind. 1000H.: 80,0

2nd speed 1/min: 360
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 24,0
 Del. quantity cm³/: -
 max. 1000H.: 80,0

Shutoff electromagnet:

Cut-in
 min. voltage : 20,0
 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation
 K mm : -
 KF mm : -
 MS mm : 0,8...1,2
 SVS max. mm : 3,2
 XK mm : 18,8...20,8
 XL mm : 12,4...15,8

Operate control lever after each
 manifold-pressure compensator pressure
 change.

Correction at adjusting nut (46)

Tractive electromagnet.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N16
Edition : 16.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R301
Type number : 0 460 424 041
Customer Part-No. : 3 914 886

Customer-specific information
Customer : CDC

Engine : 4 BTA 3,9

Power k: 88
Speed 1/mi: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC) : $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm : 1,25
mm : $\pm 0,02(0,06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100
Charge press. hPa: 1100
Setting value mm: 0,8...1,2
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 850
Charge press. hPa: 1100
Setting value bar: 4,5...5,1
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1100
Del.quantity cm³/
1000H.: 84,5...85,5
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ : 4,0
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 550
Del.quantity cm³/
1000H.: 56,5...57,5

Low-idle speed regulation:

Speed 1/min: 375
Charge press. hPa: -
Del.quantity cm³/
1000H.: 9,0...13,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ : 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340
Charge press. hPa: 1100
Del.quantity cm³/
1000H: 62,0...68,0

Start:

Speed 1/min: 100
Charge press. hPa: -
Del.quantity : -
mind cm³/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
Charge press. hPa: -
TD travel mm: 2,5...3,5
mm: -
KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1000
Charge press. hPa: 1100
TD travel mm: 0,2...1,0
mm: (0,0...1,3)
KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 1100
Charge press. hPa: 1100
TD travel mm: 0,8...1,2
mm: (0,3...1,7)
KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1250
Charge press. hPa: 1100
TD travel mm: 1,4...2,2
mm: (1,1...2,5)
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 550
Charge press. hPa: 1100
Supply-pump
pressure bar: 2,9...3,5
KSB solenoid-operated
valve volt: 12,0
2nd speed 1/min: 850
Charge press. hPa: 1100
Supply-pump
pressure bar: 4,5...5,1
KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 1100
Charge press. hPa: 1100
Supply-pump
pressure bar: 5,5...6,1
KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1250
Charge press. hPa: 1100
Supply-pump
pressure bar: 6,1...6,7
KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 550
Charge press. hPa: -

KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1250
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 600
LDA stroke mm: 6,5
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 73,5...74,5
1000H.: (70,0...78,0)
2nd speed 1/min: 1550
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...3,0
1000H.: -
3rd speed 1/min: 1480
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...15,0
1000H.: -
4th speed 1/min: 1430
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 15,0...55,0
1000H.: -
5th speed 1/min: 1340
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 62,0...68,0
1000H.: (59,0...71,0)
6th speed 1/min: 1250
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 79,0...82,0
1000H.: (77,5...83,5)
7th speed 1/min: 1100
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 81,5...84,5
1000H.: (79,5...86,5)
8th speed 1/min: 850
Charge press. hPa: 1100

KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 84,5...85,5
 1000H: (82,0...88,0)
 9th speed 1/min: 700
 Charge press. hPa: 600
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 73,5...74,5
 1000H: (70,0...78,0)
 10th speed 1/min: 550
 Charge press. hPa: 1100
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 97,0...105,0
 1000H: -
 11th speed 1/min: 550
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 56,5...57,5
 1000H: (53,0...61,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
 Del.quantity cm³/: 0..3
 1000H.: -

Electr. shutoff:

Speed 1/min: 375
 ELAB volt: -
 Del.quantity cm³/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 9,0...13,0
 1000H.: (6,0...16,0)
 2nd speed 1/min: 450
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 0,0...4,0
 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 240
 Charge press. hPa: -
 Del.quantity cm³/: -
 ind. 1000H: 80,0

2nd speed 1/min: 360
 Charge press. hPa: -

MD7

Del.quantity cm³/: -
 max. 1000H : 80,0

Shutoff electromagnet:

Cut-in
 min. voltage : 10,0
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
 K mm : -
 KF mm : -
 MS mm : 0,8...1,2
 SVS max. mm : 3,2
 XK mm : 18,8...20,8
 XL mm : 12,4...15,8

Remarks:

Operate control lever after each
 manifold-pressure compensator pressure
 change.

Correction at adjusting nut (46)

Tractive electromagnet.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N17
Edition : 16.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R301
Type number : 0 460 424 041
Customer Part-No. : 3 914 887

Customer-specific information
Customer : CDC

Engine : 4 BTA 3,9

Power k: 88
Speed 1/mi: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm: 1,25
mm: $\pm 0,02(0,06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100
Charge press. hPa: 1100
Setting value mm: 0,8...1,2
KSB solenoid-operated
valve volt: 24,0

Supply-pump pressure:

Speed 1/min: 850
Charge press. hPa: 1100
Setting value bar: 4,5...5,1
KSB solenoid-operated
valve volt: 24,0

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1100
Del.quantity cm³/
1000H.: 84,5...85,5
KSB solenoid-operated
valve volt: 24,0
Dispersion cm³ : 4,0
1000H.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 550
Del.quantity cm³/
1000H.: 56,5...57,5

Low-idle speed regulation:

Speed 1/min: 375
Charge press. hPa: -
Del.quantity cm³/
1000H.: 9,0...13,0
KSB solenoid-operated
valve volt: 24,0
Dispersion cm³ : 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340
Charge press. hPa: 1100
Del.quantity cm³/
1000H.: 62,0...68,0
KSB solenoid-operated
valve volt: 24,0

Start:

Speed 1/min: 100
Charge press. hPa: -
Del.quantity : -
mind cm³/1000H.: 70,0

KSB solenoid-operated
valve volt: 24,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
Charge press. hPa: -
TD travel mm: 2,5...3,5
mm: -

KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1000
Charge press. hPa: 1100
TD travel mm: 0,2...1,0
mm: (0,0...1,3)

KSB solenoid-operated
valve volt: 24,0
3rd speed 1/min: 1100
Charge press. hPa: 1100
TD travel mm: 0,8...1,2
mm: (0,3...1,7)

KSB solenoid-operated
valve volt: 24,0
4th speed 1/min: 1250
Charge press. hPa: 1100
TD travel mm: 1,4...2,2
mm: (1,1...2,5)

KSB solenoid-operated
valve volt: 24,0

Supply-pump pressure characteristic:

1st speed 1/min: 550
Charge press. hPa: 1100
Supply-pump
pressure bar: 2,9...3,5

KSB solenoid-operated
valve volt: 24,0

2nd speed 1/min: 850
Charge press. hPa: 1100

Supply-pump
pressure bar: 4,5...5,1

KSB solenoid-operated
valve volt: 24,0

3rd speed 1/min: 1100
Charge press. hPa: 1100

Supply-pump
pressure bar: 5,5...6,1

KSB solenoid-operated
valve volt: 24,0

4th speed 1/min: 1250
Charge press. hPa: 1100

Supply-pump
pressure bar: 6,1...6,7

KSB solenoid-operated
valve volt: 24,0

Overflow quantity at overflow valve:

1st speed 1/min: 550
Charge press. hPa: -
KSB solenoid-operated
valve volt: 24,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1250
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 24,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 600
LDA stroke mm: 6,5
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³: 73,5...74,5
1000H.: (70,0...78,0)

2nd speed 1/min: 1550
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³: 0,0...3,0
1000H.: -

3rd speed 1/min: 1480
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³: 0,0...15,0
1000H.: -

4th speed 1/min: 1430
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³: 15,0...55,0
1000H.: -

5th speed 1/min: 1340
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³: 62,0...68,0
1000H.: (59,0...71,0)

6th speed 1/min: 1250
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³: 79,0...82,0
1000H.: (77,5...83,5)

7th speed 1/min: 1100
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 24,0

Del. quantity cm³/: 81,5...84,5
 1000H.: (79,5...86,5)
 8th speed 1/min: 850
 Charge press. hPa: 1100
 KSB solenoid-operated
 valve volt: 24,0
 Del. quantity cm³/: 84,5...85,5
 1000H.: (82,0...88,0)
 9th speed 1/min: 700
 Charge press. hPa: 600
 KSB solenoid-operated
 valve volt: 24,0
 Del. quantity cm³/: 73,5...74,5
 1000H.: (70,0...78,0)
 10th speed 1/min: 550
 Charge press. hPa: 1100
 KSB solenoid-operated
 valve volt: 24,0
 Del. quantity cm³/: 97,0...105,0
 1000H.: -
 11th speed 1/min: 550
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 24,0
 Del. quantity cm³/: 56,5...57,5
 1000H.: (53,0...61,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
 Del. quantity cm³/: 0..3
 1000H.: -

Electr. shutoff:

Speed 1/min: 375
 ELAB volt: -
 Del. quantity cm³/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
 KSB solenoid-operated
 valve volt: 24,0
 Del. quantity cm³/: 9,0...13,0
 1000H.: (6,0...16,0)
 2nd speed 1/min: 450
 KSB solenoid-operated
 valve volt: 24,0
 Del. quantity cm³/: 0,0...4,0
 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 240
 Charge press. hPa: -

KSB solenoid-operated
 valve volt: 24,0
 Del. quantity cm³/: -
 ind. 1000H.: 80,0

2nd speed 1/min: 360
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 24,0
 Del. quantity cm³/: -
 max. 1000H.: 80,0

Shutoff electromagnet:

Cut-in
 min. voltage : 20,0
 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation
 K mm : -
 KF mm : -
 MS mm : 0,8...1,2
 SVS max. mm : 3,2
 XK mm : 18,8...20,8
 XL mm : 12,4...15,8

Operate control lever after each
 manifold-pressure compensator pressure
 change.

Correction at adjusting nut (46)

Tractive electromagnet.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N14
Edition : 16.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R301
Type number : 0 460 424 041
Customer Part-No. : 3 915 287

Customer-specific information
Customer : CDC

Engine : 4 BTA 3,9

Power k: 88
Speed 1/mi: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm: 1,25
mm: $\pm 0,02(0,06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100
Charge press. hPa: 1100
Setting value mm: 0,8...1,2
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 850
Charge press. hPa: 1100
Setting value bar: 4,5...5,1
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1100
Del.quantity cm³/
1000H.: 84,5...85,5
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ : 4,0
1000H.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 550
Del.quantity cm³/
1000H.: 56,5...57,5

Low-idle speed regulation:

Speed 1/min: 375
Charge press. hPa: -
Del.quantity cm³/
1000H.: 9,0...13,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ : 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340
Charge press. hPa: 1100
Del.quantity cm³/
1000H.: 62,0...68,0

Start:

Speed 1/min: 100
Charge press. hPa: -
Del.quantity : -
mind cm³/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
Charge press. hPa: -
TD travel mm: 2,5...3,5
mm: -
KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1000
Charge press. hPa: 1100
TD travel mm: 0,2...1,0
mm: (0,0...1,3)
KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 1100
Charge press. hPa: 1100
TD travel mm: 0,8...1,2
mm: (0,3...1,7)
KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1250
Charge press. hPa: 1100
TD travel mm: 1,4...2,2
mm: (1,1...2,5)
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 550
Charge press. hPa: 1100
Supply-pump
pressure bar: 2,9...3,5
KSB solenoid-operated
valve volt: 12,0
2nd speed 1/min: 850
Charge press. hPa: 1100
Supply-pump
pressure bar: 4,5...5,1
KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 1100
Charge press. hPa: 1100
Supply-pump
pressure bar: 5,5...6,1
KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1250
Charge press. hPa: 1100
Supply-pump
pressure bar: 6,1...6,7
KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 550
Charge press. hPa: -

KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1250
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 600
LDA stroke mm: 6,5
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 73,5...74,5
1000H.: (70,0...78,0)
2nd speed 1/min: 1550
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...3,0
1000H.: -
3rd speed 1/min: 1480
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...15,0
1000H.: -
4th speed 1/min: 1430
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 15,0...55,0
1000H.: -
5th speed 1/min: 1340
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 62,0...68,0
1000H.: (59,0...71,0)
6th speed 1/min: 1250
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 79,0...82,0
1000H.: (77,5...83,5)
7th speed 1/min: 1100
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 81,5...84,5
1000H.: (79,5...86,5)
8th speed 1/min: 850
Charge press. hPa: 1100

KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 84,5...85,5
 1000H: (82,0...88,0)
 9th speed 1/min: 700
 Charge press. hPa: 600
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 73,5...74,5
 1000H: (70,0...78,0)
 10th speed 1/min: 550
 Charge press. hPa: 1100
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 97,0...105,0
 1000H: -
 11th speed 1/min: 550
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 56,5...57,5
 1000H: (53,0...61,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
 Del.quantity cm³/: 0..3
 1000H.: -

Electr. shutoff:

Speed 1/min: 375
 ELAB volt: -
 Del.quantity cm³/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 9,0...13,0
 1000H.: (6,0...16,0)
 2nd speed 1/min: 450
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 0,0...4,0
 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 240
 Charge press. hPa: -
 Del.quantity cm³/: -
 ind. 1000H: 80,0
 2nd speed 1/min: 360
 Charge press. hPa: -

Del.quantity cm³/: -
 max. 1000H: 80,0

Shutoff electromagnet:

Cut-in
 min. voltage : 10,0
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: -
MS	mm	: 0,8...1,2
SVS max.	mm	: 3,2
XK	mm	: 18,8...20,8
XL	mm	: 12,4...15,8

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N15
Edition : 16.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R301
Type number : 0 460 424 041
Customer Part-No. : 3 915 427

Customer-specific information
Customer : CDC

Engine : 4 BTA 3,9

Power k: 88
Speed 1/mi: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm : 1,25
mm : $\pm 0,02(0,06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100
Charge press. hPa: 1100
Setting value mm: 0,8...1,2
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 850
Charge press. hPa: 1100
Setting value bar: 4,5...5,1
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1100
Del.quantity cm³/
1000H.: 84,5...85,5
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ : 4,0
1000H.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 550
Del.quantity cm³/
1000H.: 56,5...57,5

Low-idle speed regulation:

Speed 1/min: 375
Charge press. hPa: -
Del.quantity cm³/
1000H.: 9,0...13,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ : 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340
Charge press. hPa: 1100
Del.quantity cm³/
1000H.: 62,0...68,0

Start:

Speed 1/min: 100
Charge press. hPa: -
Del.quantity : -
mind cm³/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
Charge press. hPa: -
TD travel mm: 2,5...3,5
mm: -
KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1000
Charge press. hPa: 1100
TD travel mm: 0,2...1,0
mm: (0,0...1,3)
KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 1100
Charge press. hPa: 1100
TD travel mm: 0,8...1,2
mm: (0,3...1,7)
KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1250
Charge press. hPa: 1100
TD travel mm: 1,4...2,2
mm: (1,1...2,5)
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 550
Charge press. hPa: 1100
Supply-pump
pressure bar: 2,9...3,5
KSB solenoid-operated
valve volt: 12,0
2nd speed 1/min: 850
Charge press. hPa: 1100
Supply-pump
pressure bar: 4,5...5,1
KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 1100
Charge press. hPa: 1100
Supply-pump
pressure bar: 5,5...6,1
KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1250
Charge press. hPa: 1100
Supply-pump
pressure bar: 6,1...6,7
KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 550
Charge press. hPa: -

KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1250
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 600
LDA stroke mm: 6,5
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 73,5...74,5
1000H.: (70,0...78,0)
2nd speed 1/min: 1550
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...3,0
1000H.: -
3rd speed 1/min: 1480
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...15,0
1000H.: -
4th speed 1/min: 1430
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 15,0...55,0
1000H.: -
5th speed 1/min: 1340
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 62,0...68,0
1000H.: (59,0...71,0)
6th speed 1/min: 1250
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 79,0...82,0
1000H.: (77,5...83,5)
7th speed 1/min: 1100
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 81,5...84,5
1000H.: (79,5...86,5)
8th speed 1/min: 850
Charge press. hPa: 1100

KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 84,5...85,5
 1000H: (82,0...88,0)
 9th speed 1/min: 700
 Charge press. hPa: 600
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 73,5...74,5
 1000H: (70,0...78,0)
 10th speed 1/min: 550
 Charge press. hPa: 1100
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 97,0...105,0
 1000H: -
 11th speed 1/min: 550
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 56,5...57,5
 1000H: (53,0...61,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
 Del.quantity cm³/: 0..3
 1000H.: -

Electr. shutoff:

Speed 1/min: 375
 ELAB volt: -
 Del.quantity cm³/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 9,0...13,0
 1000H.: (6,0...16,0)
 2nd speed 1/min: 450
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 0,0...4,0
 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 240
 Charge press. hPa: -
 Del.quantity cm³/: -
 ind. 1000H: 80,0

2nd speed 1/min: 360
 Charge press. hPa: -

Del.quantity cm³/: -
 max. 1000H: 80,0

Shutoff electromagnet:

Cut-in
 min. voltage : 10,0
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: -
MS	mm	: 0,8...1,2
SVS max.	mm	: 3,2
XK	mm	: 18,8...20,8
XL	mm	: 12,4...15,8

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9N11
Edition : 17.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R301
Type number : 0 460 424 041
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 4 BTA 390 A

Power k: 88
Speed 1/mi: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC) : $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm : 1,25
mm : $\pm 0,02(0,06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

M17

Timing-device travel:

Speed 1/min: 1100
Charge press. hPa: 1100
Setting value mm: 0,8...1,2
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 850
Charge press. hPa: 1100
Setting value bar: 4,5...5,1
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1100
Del.quantity cm³/
1000H.: 84,5...85,5
KSB solenoid-operated
valve volt : 12,0
Dispersion cm³ / : 4,0
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 550
Del.quantity cm³/
1000H.: 56,5...57,5
KSB solenoid-operated
valve volt: 12,0

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm³/
1000H.: 9,0...13,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ / : 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340
Charge press. hPa: 1100
Del.quantity cm³/
1000H: 62,0...68,0
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 70,0

KSB solenoid-operated
valve volt: 12,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
Charge press. hPa: -
TD travel mm: 2,5...3,5
mm: -
KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1000
Charge press. hPa: 1100
TD travel mm: 0,2...1,0
mm: (0,0...1,3)

KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 1100
Charge press. hPa: 1100
TD travel mm: 0,8...1,2
mm: (0,3...1,7)

KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1250
Charge press. hPa: 1100
TD travel mm: 1,4...2,2
mm: (1,1...2,5)

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 550
Charge press. hPa: 1100
Supply-pump
pressure bar: 2,9...3,5

KSB solenoid-operated
valve volt: 12,0
2nd speed 1/min: 850
Charge press. hPa: 1100
Supply-pump
pressure bar: 4,5...5,1

KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 1100
Charge press. hPa: 1100
Supply-pump
pressure bar: 5,5...6,1

KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1250
Charge press. hPa: 1100
Supply-pump
pressure bar: 6,1...6,7

KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 550
Charge press. hPa: -
KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1250
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 600
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 73,5...74,5
1000H.: (70,0...78,0)

2nd speed 1/min: 1550
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...3,0
1000H.: (0,0...3,0)

3rd speed 1/min: 1480
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...15,0
1000H.: (0,0...15,0)

4th speed 1/min: 1430
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 15,0...55,0
1000H.: (15,0...55,0)

5th speed 1/min: 1340
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 62,0...68,0
1000H.: (59,0...71,0)

6th speed 1/min: 1250
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 79,0...82,0
1000H.: (77,5...83,5)

7th speed 1/min: 1100
Charge press. hPa: 1100
KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 81,5...84,5
 1000H.: (79,5...86,5)
 8th speed 1/min: 850
 Charge press. hPa: 1100
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 84,5...85,5
 1000H.: (82,0...88,0)
 9th speed 1/min: 700
 Charge press. hPa: 600
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 73,5...74,5
 1000H.: (70,0...78,0)
 10th speed 1/min: 550
 Charge press. hPa: 1100
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 97,0...105,0
 1000H.: -
 11th speed 1/min: 550
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 56,5...57,5
 1000H.: (53,0...61,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
 Del.quantity cm³/: 0..3
 1000H.: -

Electr. shutoff:

Speed 1/min: 375
 ELAB volt: -
 Del.quantity cm³/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 9,0...13,0
 1000H.: (6,0...16,0)
 2nd speed 1/min: 450
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 0,0...4,0
 1000H.: (0,0...4,0)

Automatic starting fuel delivery:

1st speed 1/min: 240
 KSB solenoid-operated
 valve volt: 12,0

Del.quantity cm³/: -
 ind. 1000H: 80,0
 2nd speed 1/min: 360
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: -
 max. 1000H : 80,0

Shutoff electromagnet:

Cut-in
 min. voltage : 10,0
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
 K mm : -
 MS mm : 0,8...1,2
 SVS max. mm : 3,2
 XK mm : 18,8...20,8
 XL mm : 12,4...15,8

Remarks:

:
 Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : HEP 3,7 A
Edition : 08.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1400 R314
Type number : 0 460 424 044

Customer-specific information
Customer : HERCULES

Engine : DT 3,7 L

Power k: 77
Speed 1/mi: 2800

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): +0,02(0,04)

Indicator setting:
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Charge press. hPa: 1000
Setting value mm: 1,6...2,0

Supply-pump pressure:

Speed 1/min: 900
Charge press. hPa: 1000
Setting value bar: 4,1...4,7

Full-load del. with charge press.:

Speed 1/min: 900
Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 73,5...74,5
Dispersion cm3/ : 4,0
1000H : 4,5

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 37,0...38,0

Low-idlespeed regulation:

Speed 1/min: 250
Charge press. hPa: -
Del.quantity cm3/
1000H.: 2,0...4,0

Full-load speed regulation:

Speed 1/min: 1480
Charge press. hPa: 1000
Del.quantity cm3/
1000H: 52,0...58,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 50,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
Charge press. hPa: 1000
TD travel mm: 0,6...1,4
mm: (0,3...1,7)

2nd speed 1/min: 900
Charge press. hPa: 1000
TD travel mm: 1,6...2,0
mm: (1,1...2,5)

3rd speed 1/min: 1250

Charge press. hPa: 1000
TD travel mm: 2,7...3,5
mm: (2,4...3,8)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 2,5...3,1
2nd speed 1/min: 900
Charge press. hPa: 1000
Supply-pump pressure bar: 4,1...4,7
3rd speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump pressure bar: 5,5...6,1

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1400
Charge press. hPa: 1000
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 400
LDA stroke mm: 6,2
Del.quantity cm³/: 66,5...67,5
1000H.: (63,0...71,0)
2nd speed 1/min: 1600
Charge press. hPa: 1000
Del.quantity cm³/: 0,0...3,0
1000H.: -
3rd speed 1/min: 1580
Charge press. hPa: 1000
Del.quantity cm³/: 0,0...15,0
1000H.: -
4th speed 1/min: 1540
Charge press. hPa: 1000
Del.quantity cm³/: 15,0...55,0
1000H.: -
5th speed 1/min: 1480
Charge press. hPa: 1000
Del.quantity cm³/: 52,0...58,0
1000H.: (49,0...61,0)
6th speed 1/min: 1400
Charge press. hPa: 1000
Del.quantity cm³/: 66,0...69,0
1000H.: (64,5...70,5)
7th speed 1/min: 1100
Charge press. hPa: 1000

Del.quantity cm³/: 69,5...72,5
1000H.: (67,5...74,5)
8th speed 1/min: 900
Charge press. hPa: 1000
Del.quantity cm³/: 73,5...74,5
1000H.: (71,0...77,0)
9th speed 1/min: 700
Charge press. hPa: 400
Del.quantity cm³/: 66,5...67,5
1000H.: (63,0...71,0)
10th speed 1/min: 500
Charge press. hPa: 1000
Del.quantity cm³/: 79,0...87,0
1000H.: -
11th speed 1/min: 500
Charge press. hPa: -
Del.quantity cm³/: 37,0...38,0
1000H.: (33,5...41,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1400
Del.quantity cm³/: 0...3
1000H.: -

Electr. shutoff:

Speed 1/min: 250
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 250
Del.quantity cm³/: 2,0...4,0
1000H.: (0,0...6,0)

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm³/: -
ind. 1000H.: 50,0

2nd speed 1/min: 250
Del.quantity cm³/: -
max. 1000H.: 30,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : -

KF	mm	: 5,0...5,4
MS	mm	: 1,0...1,4
SVS max.	mm	: 2,7
XK	mm	: 18,8...20,8
XL	mm	: 11,8...15,2

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N12
Edition : 12.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R226-9
Type number : 0 460 424 048

Customer-specific information
Customer : CDC

Engine : 4 BT

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm : 1,80
mm: $\pm 0,02(0,06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Setting value mm: 2,0...2,4

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 4,6...5,2

Full-load del. w/out charge press.:

Speed 1/min : 1100
Del.quantity cm3/
1000H.: 60,5...61,5
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 335
Del.quantity cm3/
1000H.: 9,0...11,0

Full-load speed regulation:

Speed 1/min: 1310
Del.quantity cm3/
1000H: 42,0...48,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 45,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 0,9...1,7
mm: (0,6...2,0)
2nd speed 1/min: 900
TD travel mm: 2,0...2,4
mm: (1,5...2,9)
3rd speed 1/min: 1100
TD travel mm: 2,9...3,7
mm: (2,6...4,0)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,7...3,3
2nd speed 1/min: 750
Supply-pump
pressure bar: 3,9...4,5
3rd speed 1/min: 900
Supply-pump
pressure bar: 4,6...5,2
4th speed 1/min: 1100

Supply-pump
pressure bar: 5,4...6,0

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1250
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1430
Del.quantity cm3/: 0,0...3,0
1000H.: -
2nd speed 1/min: 1380
Del.quantity cm3/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1340
Del.quantity cm3/: 15,0...55,0
1000H.: -
4th speed 1/min: 1310
Del.quantity cm3/: 42,0...48,0
1000H.: (39,0...51,0)
5th speed 1/min: 1250
Del.quantity cm3/: 59,0...62,0
1000H.: (57,5...63,5)
6th speed 1/min: 1100
Del.quantity cm3/: 60,5...61,5
1000H.: (58,0...64,0)
7th speed 1/min: 750
Del.quantity cm3/: 60,5...64,5
1000H.: (58,5...66,5)
8th speed 1/min: 500
Del.quantity cm3/: 56,0...66,0
1000H.: (55,0...67,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
Del.quantity cm3/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 335
ELAB volt: -
Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 335
Del.quantity cm3/: 9,0...11,0
1000H.: (5,0...15,0)
2nd speed 1/min: 500

Del.quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm3/: -
ind. 1000H.: 45,0

2nd speed 1/min: 300
Del.quantity cm3/: -
max. 1000H.: 70,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,0...5,4
MS	mm	: 0,8...1,2
SVS max.	mm	: 4,7
XK	mm	: 18,8...20,8
XL	mm	: 11,8...14,9

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : HEP 3,7 B
Edition : 09.05.89
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 4/12F1400 R314-1
Type number : 0 460 424 049

Customer-specific information
Customer : HERCULES

Engine : DT - 3,7 L

Power k: 91
Speed 1/mi: 2800

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Charge press. hPa: 1000
Setting value mm: 1,7...2,1

Supply-pump pressure:

Speed 1/min: 900
Charge press. hPa: 1000
Setting value bar: 3,7...4,3

Full-load del. with charge press.:

Speed 1/min: 900
Charge press. hPa: 1000
Del.quantity cm³/
1000H.: 79,0...80,0
Dispersion cm³/ : 4,0
1000H : 4,5

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm³/
1000H.: 38,5...39,5

Low-idle speed regulation:

Speed 1/min: 250
Charge press. hPa: -
Del.quantity cm³/
1000H.: 7,5...9,5

Full-load speed regulation:

Speed 1/min: 1480
Charge press. hPa: 1000
Del.quantity cm³/
1000H: 53,0...59,0

Start:

Speed 1/min: 100
Charge press. hPa: -
Del.quantity : -
mind cm³/1000H.: 50,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
Charge press. hPa: 1000
TD travel mm: 0,8...1,6
mm: (0,5...1,9)
2nd speed 1/min: 900
Charge press. hPa: 1000
TD travel mm: 1,7...2,1
mm: (1,2...2,6)
3rd speed 1/min: 1250
Charge press. hPa: 1000
TD travel mm: 2,9...3,7
mm: (2,6...4,0)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 2,1...2,7
2nd speed 1/min: 900
Charge press. hPa: 1000
Supply-pump pressure bar: 3,7...4,3
3rd speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump pressure bar: 5,1...5,7

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Overflow quantity cm³/10s: (41...83)
2nd speed 1/min: 1400
Charge press. hPa: 1000
Overflow quantity cm³/10s: (55...138)
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 550
LDA stroke mm: 7,1
Del.quantity cm³/: 70,5...71,5
1000H.: (67,0...75,0)
2nd speed 1/min: 1600
Charge press. hPa: 1000
Del.quantity cm³/: 0,0...3,0
1000H.: -
3rd speed 1/min: 1580
Charge press. hPa: 1000
Del.quantity cm³/: 0,0...15,0
1000H.: -
4th speed 1/min: 1540
Charge press. hPa: 1000
Del.quantity cm³/: 15,0...55,0
1000H.: -
5th speed 1/min: 1480
Charge press. hPa: 1000
Del.quantity cm³/: 53,0...59,0
1000H.: (50,0...62,0)
6th speed 1/min: 1400
Charge press. hPa: 1000
Del.quantity cm³/: 69,0...72,0
1000H.: (67,5...73,5)
7th speed 1/min: 1100
Charge press. hPa: 1000
Del.quantity cm³/: 74,0...77,0
1000H.: (72,0...79,0)
8th speed 1/min: 900

Charge press. hPa: 1000
Del.quantity cm³/: 79,0...80,0
1000H.: (76,5...82,5)
9th speed 1/min: 700
Charge press. hPa: 1000
Del.quantity cm³/: 70,5...71,5
1000H.: (67,0...75,0)
10th speed 1/min: 500
Charge press. hPa: 1000
Del.quantity cm³/: 86,0...94,0
1000H.: -
11th speed 1/min: 500
Charge press. hPa: 1000
Del.quantity cm³/: 38,5...39,5
1000H.: (35,0...43,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1400
Del.quantity cm³/: 0...3
1000H.: -

Electr. shutoff:

Speed 1/min: 250
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 250
Del.quantity cm³/: 7,5...9,5
1000H.: (3,5...13,5)

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm³/: -
ind. 1000H.: 50,0

2nd speed 1/min: 250
Del.quantity cm³/: -
max. 1000H.: 30,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : -
KF mm : 5,0...5,4
MS mm : 1,0...1,4
SVS max. mm : 1,5

XK mm : 18,8...20,8
XL mm : 12,6...16,0

Remarks:

Operate control lever after each
manifold-pressure compensator pressure
change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 0
Compl. date: : 846
Edition : 16.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1400 R239-2
Type number : 0 460 424 051
Customer Part-No. : 3 906 323

Customer-specific information
Customer : CDC

Engine : 4 BTA 3.9 AU

Power k: 90
Speed 1/mi: 2800

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): +0,02(0,04)

Start of delivery block
Piston stroke mm: 1,95
mm: +0,02(0,06)

Outlet : A

Injection-pump setting values
Test specifications in parentheses

M28

Timing-device travel:

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 1,8...2,2

Supply-pump pressure:

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value bar: 5,7...6,3

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 86,0...87,0
Dispersion cm3/ : 4,0
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 58,5...59,5

Low-idle speed regulation:

Speed 1/min: 400
Del.quantity cm3/
1000H.: 4,0...6,0
Dispersion cm3/: 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1480
Charge press. hPa: 1000
Del.quantity cm3/
1000H: 61,5...67,5

Start:

Speed 1/min: 100
Del.quantity : 70,0...140,0
mind cm3/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

Mfg. date: until : 846

1st speed 1/min: 850
Charge press. hPa: 1000
TD travel mm: 0,8...1,6
mm: (0,5...1,9)

2nd speed 1/min: 1100
 Charge press. hPa: 1000
 TD travel mm: 1,8...2,2
 mm: (1,3...2,7)
 3rd speed 1/min: 1250
 Charge press. hPa: 1000
 TD travel mm: 2,2...3,0
 mm: (1,9...3,3)

Mfg. date: from : 945

1st speed 1/min: 850
 Charge press. hPa: 1000
 TD travel mm: 0,8...1,6
 mm: (0,5...1,9)
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 TD travel mm: 1,8...2,2
 mm: (1,3...2,7)
 3rd speed 1/min: 1250
 Charge press. hPa: 1000
 TD travel mm: 2,2...3,0
 mm: (1,9...3,3)

Supply-pump pressure characteristic:

Mfg. date: until : 846
 1st speed 1/min: 500
 Charge press. hPa: 1000
 Supply-pump pressure bar: 3,2...3,8
 2nd speed 1/min: 850
 Charge press. hPa: 1000
 Supply-pump pressure bar: 4,7...5,3
 3rd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump pressure bar: 5,7...6,3
 4th speed 1/min: 1250
 Charge press. hPa: 1000
 Supply-pump pressure bar: 6,3...6,9

Mfg date: from : 945
 1st speed 1/min: 500
 Charge press. hPa: 1000
 Supply-pump pressure bar: 3,2...3,8
 2nd speed 1/min: 850
 Charge press. hPa: 1000
 Supply-pump pressure bar: 4,7...5,3
 3rd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump pressure bar: 5,7...6,3
 4th speed 1/min: 1250
 Charge press. hPa: 1000

Supply-pump pressure bar: 6,3...6,9

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Overflow : 41...83
 quantity cm3/10s: (26...98)
 2nd speed 1/min: 1400
 Charge press. hPa: 1000
 Overflow : 55...138
 quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

Mfg. date: until : 846
 1st speed 1/min: 1640
 Charge-air pressure-setting point hPa: 1000
 Del.quantity cm3/: 0,0...3,0
 1000H.: (0,0...3,0)
 2nd speed 1/min: 1600
 Charge press. hPa: 1000
 Del.quantity cm3/: 0,0...15,0
 1000H.: (0,0...15,0)
 3rd speed 1/min: 1560
 Charge press. hPa: 1000
 Del.quantity cm3/: 15,0...55,0
 1000H.: (15,0...55,0)
 4th speed 1/min: 1480
 Charge press. hPa: 1000
 Del.quantity cm3/: 61,5...67,5
 1000H.: (58,5...70,5)
 5th speed 1/min: 1400
 Charge press. hPa: 1000
 Del.quantity cm3/: 73,0...76,0
 1000H.: (71,5...77,5)
 6th speed 1/min: 1100
 Charge press. hPa: 1000
 Del.quantity cm3/: 79,0...82,0
 1000H.: (77,0...84,0)
 7th speed 1/min: 750
 Charge press. hPa: 1000
 Del.quantity cm3/: 86,0...87,0
 1000H.: (83,5...89,5)
 8th speed 1/min: 700
 Charge press. hPa: 330
 Del.quantity cm3/: 72,0...73,0
 1000H.: (68,5...76,5)
 9th speed 1/min: 500
 Charge press. hPa: 1000
 Del.quantity cm3/: 98,0...108,0
 1000H.: -
 10th speed 1/min: 500
 Del.quantity cm3/: 58,5...59,5
 1000H.: (55,0...63,0)

Mfg. date: from : 945
 1st speed 1/min: 700

Charge-air pressure-setting
point hPa: 330
LDA stroke mm: 7,2
Del.quantity cm³/: 64,5...65,5
1000H.: (61,0...69,0)
2nd speed 1/min: 1640
Charge press. hPa: 1000
Del.quantity cm³/: 0,0...3,0
1000H.: -
3rd speed 1/min: 1600
Charge press. hPa: 1000
Del.quantity cm³/: 0,0...15,0
1000H.: -
4th speed 1/min: 1560
Charge press. hPa: 1000
Del.quantity cm³/: 15,0...55,0
1000H.: -
5th speed 1/min: 1500
Charge press. hPa: 1000
Del.quantity cm³/: 48,5...54,5
1000H.: (45,5...57,5)
6th speed 1/min: 1400
Charge press. hPa: 1000
Del.quantity cm³/: 71,0...74,0
1000H.: (69,5...75,5)
7th speed 1/min: 1100
Charge press. hPa: 1000
Del.quantity cm³/: 77,0...80,0
1000H.: (75,0...82,0)
8th speed 1/min: 750
Charge press. hPa: 1000
Del.quantity cm³/: 82,0...83,0
1000H.: (79,5...85,5)
9th speed 1/min: 700
Charge press. hPa: 330
Del.quantity cm³/: 64,5...65,5
1000H.: (61,0...69,0)
10th speed 1/min: 500
Charge press. hPa: 1000
Del.quantity cm³/: 94,0...104,0
1000H.: -
11th speed 1/min: 500
Charge press. hPa: -
Del.quantity cm³/: 55,5...56,5
1000H.: (52,0...60,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1400
Del.quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 400
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

NO2

Idle delivery:

1st speed 1/min: 400
Del.quantity cm³/: 4,0...6,0
1000H.: (0,0...10,0)
2nd speed 1/min: 450
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 230
Charge press. hPa: -
Del.quantity cm³/: -
ind. 1000H: 80,0
2nd speed 1/min: 400
Charge press. hPa: -
Del.quantity cm³/: -
max. 1000H : 80,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: K-OT
MS	mm	: 1,0...1,4
SVS max.	mm	: 2,5
XK	mm	: 21,8...23,8
XL	mm	: 11,5...14,9

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U27
Edition : 16.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R195
Type number : 0 460 426 059

Customer-specific information
Customer : CDC

Engine : 6 BT-590A

TEST BENCH REQUIREMENTS

Calibrating oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm: 1,40
mm: $\pm 0,02(0,06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250
Charge press. hPa: 1100

Setting value mm: 1,2...1,6

Supply-pump pressure:

Speed 1/min: 1250
Charge press. hPa: 1100
Setting value bar: 6,9...7,5

Full-load del. with charge press.:

Speed 1/min: 1100
Charge press. hPa: 1100
Del.quantity cm³/
1000H.: 71,5...72,5
Dispersion cm³/
1000H.: 4,0
1000H.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm³/
1000H.: 49,5...50,5

Low-idle speed regulation:

Speed 1/min: 375
Charge press. hPa: -
Del.quantity cm³/
1000H.: 9,0...13,0
Dispersion cm³/
1000H.: 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1360
Charge press. hPa: 1100
Del.quantity cm³/
1000H.: 54,0...60,0

Start:

Speed 1/min: 100
Charge press. hPa: -
Del.quantity : -
mind cm³/1000H.: 55,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1100
Charge press. hPa: 1100
TD travel mm: 0,2...1,0
mm: (0,0...1,2)
2nd speed 1/min: 1250
Charge press. hPa: 1100
TD travel mm: 1,2...1,6
mm: (0,7...2,1)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1100
Supply-pump pressure bar: 3,6...4,2
2nd speed 1/min: 1100
Charge press. hPa: 1100
Supply-pump pressure bar: 6,2...6,8
3rd speed 1/min: 1250
Charge press. hPa: 1100
Supply-pump pressure bar: 6,9...7,5

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Overflow quantity cm³/10s: 41...83
2nd speed 1/min: 1250
Charge press. hPa: 1100
Overflow quantity cm³/10s: 55...138
quantity cm³/10s: (40...153)

Delivery quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 580
1. DA stroke mm: 7,5
Del. quantity cm³/: 65,5...66,5
1000H.: (62,5...70,5)
2nd speed 1/min: 1550
Charge press. hPa: 1100
Del. quantity cm³/: 0,0...3,0
1000H.: -
3rd speed 1/min: 1520
Charge press. hPa: 1100
Del. quantity cm³/: 0,0...15,0
1000H.: -
4th speed 1/min: 1480
Charge press. hPa: 1100
Del. quantity cm³/: 15,0...55,0
1000H.: -
5th speed 1/min: 1360
Charge press. hPa: 1100
Del. quantity cm³/: 54,0...60,0
1000H.: (51,0...63,0)
6th speed 1/min: 1250
Charge press. hPa: 1100
Del. quantity cm³/: 70,5...73,5
1000H.: (69,0...75,0)
7th speed 1/min: 1100
Charge press. hPa: 1100
Del. quantity cm³/: 71,5...72,5
1000H.: (69,0...75,0)
8th speed 1/min: 750

Charge press. hPa: 1100
Del. quantity cm³/: 80,0...84,0
1000H.: (78,0...86,0)
9th speed 1/min: 700
Charge press. hPa: 580
Del. quantity cm³/: 71,5...72,5
1000H.: (69,0...75,0)
10th speed 1/min: 500
Charge press. hPa: 1100
Del. quantity cm³/: 88,0...96,0
1000H.: -
11th speed 1/min: 500
Charge press. hPa: -
Del. quantity cm³/: 49,5...50,5
1000H.: (46,0...54,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
Del. quantity cm³/: 0...3
1000H.: -

Electr. shutoff:

Speed 1/min: 365
ELAB volt: -
Del. quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del. quantity cm³/: 9,0...13,0
1000H.: (6,0...16,0)
2nd speed 1/min: 450
Del. quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 300
Charge press. hPa: -
Del. quantity cm³/: -
ind. 1000H: 60,0
2nd speed 1/min: 400
Charge press. hPa: -
Del. quantity cm³/: -
max. 1000H : 60,0

Shutoff electromagnet:

Cut-in min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	K-OT
MS	mm	:	1,0...1,4
SVS max.	mm	:	1,5

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U24
 Edition : 16.05.89
 replaces : -
 Calibrating oil : ISO 4113
 Injection pump : VE 6/12F1250 R278
 Type number : 0 460 426 103
 Customer-specific information
 Customer : CDC
 Engine : 6 BT -590A CHRYSLER

TEST BENCH REQUIREMENTS

Calibrating oil
 return temp. °C
 with thermometer : 40...48
 electronically : 42...50
 Inlet press., bar : 0.35
 Calibrating nozzle-holder
 assembly : 1 688 901 027
 Opening
 pressure bar : 250...253
 Perforated-plate
 diameter mm : 0.5
 Test inj. tubing : 1 680 750 017
 Outside diameter : 6
 x Wall thickness : 2
 x Length mm : 840
 Start of delivery
 Prestroke mm : -
 (from BDC): -
 Start of delivery block
 Piston stroke mm : 1,4
 mm: $\pm 0,02(0,06)$
 Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100
 Charge press. hPa: 1200

Setting value mm: 1,3...1,7
 KSB solenoid-operated
 valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1100
 Charge press. hPa: 1200
 Setting value bar: 6,8...7,4
 KSB solenoid-operated
 valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1100
 Charge press. hPa: 1200
 Del.quantity cm3/
 1000H.: 75,5...76,5
 KSB solenoid-operated
 valve volt: 12,0
 Dispersion cm3/ : 4,0
 1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500
 Del.quantity cm3/
 1000H.: 51,5...52,5
 KSB solenoid-operated
 valve volt: 12,0
 Dispersion cm3/ : 9,0
 1000H.: -

Low-idle speed regulation:

Speed 1/min: 350
 Charge press. hPa: -
 Del.quantity cm3/
 1000H.: 5,5...9,5
 KSB solenoid-operated
 valve volt: 12,0
 Dispersion cm3/ : 5,5
 1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340
 Charge press. hPa: 1200
 Del.quantity cm3/
 1000H: 52,5...58,5
 KSB solenoid-operated
 valve volt: 12,0

Start:

Speed 1/min: 100
 Charge press. hPa: -
 Del.quantity : -
 mind cm3/1000H.: 60,0

KSB solenoid-operated
valve volt: 12,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 450
Charge press. hPa: -
TD travel mm: 3,0...4,0
mm: -

KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1000
Charge press. hPa: 1200
TD travel mm: 0,5...1,3
mm: (0,2...1,6)

KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 1100
Charge press. hPa: 1200
TD travel mm: 1,3...1,7
mm: (0,8...2,2)

KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1250
Charge press. hPa: 1200
TD travel mm: 2,2...3,0
mm: (1,9...3,3)

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1200
Supply-pump
pressure bar: 4,1...4,7

KSB solenoid-operated
valve volt: 12,0

2nd speed 1/min: 1100
Charge press. hPa: 1200

Supply-pump
pressure bar: 6,8...7,4

KSB solenoid-operated
valve volt: 12,0

3rd speed 1/min: 1250
Charge press. hPa: 1200

Supply-pump
pressure bar: 7,5...8,1

KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -

KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1250
Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 700
LDA stroke mm: 6,2
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 68,0...69,0
1000H.: (64,5...72,5)

2nd speed 1/min: 1550
Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0...3,0
1000H.: -

3rd speed 1/min: 1450
Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...15,0
1000H.: -

4th speed 1/min: 1410
Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 15,0...55,0
1000H.: -

5th speed 1/min: 1340
Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 52,5...58,5
1000H.: (49,5...61,5)

6th speed 1/min: 1250
Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 71,5...74,5
1000H.: (70,0...76,0)

7th speed 1/min: 1100
Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 75,5...76,5
1000H.: (73,0...79,0)

8th speed 1/min: 750
Charge press. hPa: 1200

KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 75,0...80,0
 1000H: (73,0...82,0)
 9th speed 1/min: 700
 Charge press. hPa: 700
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 68,0...69,0
 1000H: (64,5...72,5)
 10th speed 1/min: 500
 Charge press. hPa: 1200
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 82,0...94,0
 1000H: -
 11th speed 1/min: 500
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 51,5...52,5
 1000H: (48,0...56,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
 Del.quantity cm³/: 0..3
 1000H.: -

Electr. shutoff:

Speed 1/min: 350
 ELAB volt: -
 Del.quantity cm³/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 350
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 5,5...9,5
 1000H.: (2,5...12,5)
 2nd speed 1/min: 450
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 0,0...4,0
 1000H.: -
 3rd speed 1/min: 300
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 8,5...16,5
 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
 Charge press. hPa: -

KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: -
 ind. 1000H: 60,0

2nd speed 1/min: 250
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: -
 max. 1000H: 50,0

Shutoff electromagnet:

Cut-in
 min. voltage : 10,0
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,7
KF	mm	: K-OT
MS	mm	: 1,0...1,4
SVS max.	mm	: 1,4
XK	mm	: 18,8...20,8
XL	mm	: 12,5...15,9

Operate control lever after each manifold-pressure compensator pressure change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U25
Edition : 16.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R278
Type number : 0 460 426 103
Customer Part-No. : 3 915 289

Customer-specific information
Customer : CDC

Engine : 6 BT -590A CHRYSLER

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Start of delivery block
Piston stroke mm : 1,4
mm : $\pm 0,02(0,06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100

Charge press. hPa: 1200
Setting value mm: 1,3...1,7
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1100
Charge press. hPa: 1200
Setting value bar: 6,8...7,4
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1100
Charge press. hPa: 1200
Del.quantity cm³/
1000H.: 73,0...74,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ / : 4,0
1000H.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm³/
1000H.: 51,0...52,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ / : 9,0
1000H.: -

Low-idle speed regulation:

Speed 1/min: 350
Charge press. hPa: -
Del.quantity cm³/
1000H.: 5,5...9,5
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ / : 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1340
Charge press. hPa: 1200
Del.quantity cm³/
1000H.: 52,5...58,5
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Charge press. hPa: -
Del.quantity : -
mind cm³/1000H.: 60,0

KSB solenoid-operated
valve volt: 12,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 450
Charge press. hPa: -
TD travel mm: 3,0...4,0
mm: -

KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1000
Charge press. hPa: 1200
TD travel mm: 0,5...1,3
mm: (0,2...1,6)

KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 1100
Charge press. hPa: 1200
TD travel mm: 1,3...1,7
mm: (0,8...2,2)

KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1250
Charge press. hPa: 1200
TD travel mm: 2,2...3,0
mm: (1,9...3,3)

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1200
Supply-pump
pressure bar: 4,1...4,7

KSB solenoid-operated
valve volt: 12,0

2nd speed 1/min: 1100
Charge press. hPa: 1200

Supply-pump
pressure bar: 6,8...7,4

KSB solenoid-operated
valve volt: 12,0

3rd speed 1/min: 1250
Charge press. hPa: 1200

Supply-pump
pressure bar: 7,5...8,1

KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -

KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1250
Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 700
LDA stroke mm: 6,2
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 68,0...69,0
1000H.: (64,5...72,5)

2nd speed 1/min: 1550
Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0...3,0
1000H.: -

3rd speed 1/min: 1450
Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...15,0
1000H.: -

4th speed 1/min: 1410
Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 15,0...55,0
1000H.: -

5th speed 1/min: 1340
Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 52,5...58,5
1000H.: (49,5...61,5)

6th speed 1/min: 1250
Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 69,0...72,0
1000H.: (67,5...73,5)

7th speed 1/min: 1100
Charge press. hPa: 1200
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 73,0...74,0
1000H.: (70,5...76,5)

8th speed 1/min: 750
Charge press. hPa: 1200

KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 72,0...77,0
 1000H: (70,0...79,0)
 9th speed 1/min: 700
 Charge press. hPa: 700
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 68,0...69,0
 1000H: (64,5...72,5)
 10th speed 1/min: 500
 Charge press. hPa: 1200
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 79,0...91,0
 1000H: -
 11th speed 1/min: 500
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 51,0...52,0
 1000H: (47,5...55,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
 Del.quantity cm³/: 0...3
 1000H.: -

Electr. shutoff:

Speed 1/min: 350
 ELAB volt: -
 Del.quantity cm³/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 350
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 5,5...9,5
 1000H.: (2,5...12,5)
 2nd speed 1/min: 450
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 0,0...4,0
 1000H.: -
 3rd speed 1/min: 300
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 8,5...16,5
 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
 Charge press. hPa: -

N11

KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: -
 ind. 1000H: 60,0

2nd speed 1/min: 250
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: -
 max. 1000H: 50,0

Shutoff electromagnet:

Cut-in
 min. voltage : 10,0
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
 K mm : 3,7
 KF mm : K-OT
 MS mm : 1,0...1,4
 SVS max. mm : 1,4
 XK mm : 18,8...20,8
 XL mm : 12,5...15,9

Operate control lever after each manifold-pressure compensator pressure change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U33
Edition : 17.05.89
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 6/12F1250 R304
Type number : 0 460 426 110

Customer-specific information
Customer : CDC

Engine : 6 BTA

Power k: 136
Speed 1/mi: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Start of delivery block
Piston stroke mm: 1,15
mm: $\pm 0,02 (0,06)$

Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 850
Charge press. hPa: 1400
Setting value mm: 2,1...2,5
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 850
Charge press. hPa: 1400
Setting value bar: 6,1...6,7
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1400
Del.quantity cm3/
1000H.: 82,0...83,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/ : 4,0
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 58,5...59,5
KSB solenoid-operated
valve volt: 12,0

Low-idle speed regulation:

Speed 1/min: 375
Charge press. hPa: -
Del.quantity cm3/
1000H.: 4,0...6,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1370
Charge press. hPa: 1400
Del.quantity cm3/
1000H: 61,0...67,0
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Charge press. hPa: -
Del.quantity : -
mind cm3/1000H.: 70,0

KSB solenoid-operated
valve volt: 12,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
Charge press. hPa: 1400
TD travel mm: 3,0...4,0
mm: -

KSB solenoid-operated
valve volt: -
2nd speed 1/min: 700
Charge press. hPa: 1400
TD travel mm: 0,1...0,9
mm: (0,0...1,2)

KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 850
Charge press. hPa: 1400
TD travel mm: 2,1...2,5
mm: (1,6...3,0)

KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1000
Charge press. hPa: 1400
TD travel mm: 2,9...3,7
mm: (2,6...4,0)

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1400
Supply-pump
pressure bar: 4,5...5,1

KSB solenoid-operated
valve volt: 12,0

2nd speed 1/min: 850
Charge press. hPa: 1400

Supply-pump
pressure bar: 6,1...6,7

KSB solenoid-operated
valve volt: 12,0

3rd speed 1/min: 1250
Charge press. hPa: 1400

Supply-pump
pressure bar: 7,7...8,3

KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -

KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1250
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 850

LDA stroke mm: 6,6
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 78,0...79,0
1000H.: (74,0...83,0)

2nd speed 1/min: 1500
Charge press. hPa: 1400

KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...3,0
1000H.: -

3rd speed 1/min: 1470
Charge press. hPa: 1400

KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...15,0
1000H.: -

4th speed 1/min: 1420
Charge press. hPa: 1400

KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 15,0...55,0
1000H.: -

5th speed 1/min: 1370
Charge press. hPa: 1400

KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 61,0...67,0
1000H.: (58,0...70,0)

6th speed 1/min: 1250
Charge press. hPa: 1400

KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 82,0...83,0
1000H.: (79,5...85,5)

7th speed 1/min: 1100
Charge press. hPa: 1400

KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 80,0...86,0
1000H.: (78,5...87,5)

8th speed 1/min: 850
Charge press. hPa: 1400

KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 82,5...89,5
 1000H.: (81,0...91,0)
 9th speed 1/min: 700
 Charge press. hPa: 850
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 78,0...79,0
 1000H.: (74,0...83,0)
 10th speed 1/min: 500
 Charge press. hPa: 1400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 95,5...109,5
 1000H.: -
 11th speed 1/min: 500
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 58,5...59,5
 1000H.: (54,5...63,5)

Mfg. date: from : 944
 1st speed 1/min: 700
 Charge-air pressure-setting
 point hPa: 745
 LDA stroke mm: 6,6
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 76,0...77,0
 1000H.: (72,0...81,0)
 2nd speed 1/min: 1500
 Charge press. hPa: 1400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 0,0...3,0
 1000H.: -
 3rd speed 1/min: 1470
 Charge press. hPa: 1400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 0,0...15,0
 1000H.: -
 4th speed 1/min: 1420
 Charge press. hPa: 1400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 15,0...55,0
 1000H.: -
 5th speed 1/min: 1370
 Charge press. hPa: 1400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 61,0...67,0
 1000H.: (58,0...70,0)
 6th speed 1/min: 1250
 Charge press. hPa: 1400
 KSB solenoid-operated
 valve volt: 12,0

Del.quantity cm3/: 79,0...80,0
 1000H.: (76,5...82,5)
 7th speed 1/min: 1100
 Charge press. hPa: 1400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 77,0...83,0
 1000H.: (75,5...84,5)
 8th speed 1/min: 850
 Charge press. hPa: 1400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 79,5...86,5
 1000H.: (78,0...88,0)
 9th speed 1/min: 700
 Charge press. hPa: 745
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 76,0...77,0
 1000H.: (72,0...81,0)
 10th speed 1/min: 500
 Charge press. hPa: 1400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 92,5...106,5
 1000H.: -
 11th speed 1/min: 500
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 58,5...59,5
 1000H.: (54,5...63,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
 Del.quantity cm3/: 0..3
 1000H.: -

Electr. shutoff:

Speed 1/min: 375
 ELAB volt: -
 Del.quantity cm3/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 4,0...6,0
 1000H.: (0,0...10,0)
 2nd speed 1/min: 400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 0,0...4,0
 1000H.: -

3rd speed 1/min: 325
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 12,5..20,5
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 150
Charge press. hPa: -
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
ind. 1000H: 80,0

2nd speed 1/min: 240
Charge press. hPa: -
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
max. 1000H : 60,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,6...3,8
KF mm : -
MS mm : 0,8...1,2
SVS max. mm : 4,4

Operate control lever after each
manifold-pressure compensator pressure
change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U30
Edition : 17.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R304
Type number : 0 460 426 110
Customer Part-No. : 3 911 239

Customer-specific information
Customer : CDC

Engine : 6 BTA

Power k: 136
Speed 1/mi: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Start of delivery block
Piston stroke mm: 1,15
mm: +0,02(0,06)

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 850
Charge press. hPa: 1400
Setting value mm: 2,1...2,5
KSB solenoid-operated
valve volt: 24,0

Supply-pump pressure:

Speed 1/min: 850
Charge press. hPa: 1400
Setting value bar: 6,1...6,7
KSB solenoid-operated
valve volt: 24,0

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1400
Del.quantity cm³/
1000H.: 82,0...83,0
KSB solenoid-operated
valve volt: 24,0
Dispersion cm³/
1000H.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm³/
1000H.: 58,5...59,5
KSB solenoid-operated
valve volt: 24,0

Low-idle speed regulation:

Speed 1/min: 375
Charge press. hPa: -
Del.quantity cm³/
1000H.: 4,0...6,0
KSB solenoid-operated
valve volt: 24,0
Dispersion cm³/
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1370
Charge press. hPa: 1400
Del.quantity cm³/
1000H.: 61,0...67,0
KSB solenoid-operated
valve volt: 24,0

Start:

Speed 1/min: 100
Charge press. hPa: -

Del. quantity : -
mind cm³/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
Charge press. hPa: 1400
TD travel mm: 3,0...4,0
mm: -

KSB solenoid-operated
valve volt: -
2nd speed 1/min: 700
Charge press. hPa: 1400
TD travel mm: 0,1...0,9
mm: (0,0...1,2)

KSB solenoid-operated
valve volt: 24,0
3rd speed 1/min: 850
Charge press. hPa: 1400
TD travel mm: 2,1...2,5
mm: (1,6...3,0)

KSB solenoid-operated
valve volt: 24,0
4th speed 1/min: 1000
Charge press. hPa: 1400
TD travel mm: 2,9...3,7
mm: (2,6...4,0)

KSB solenoid-operated
valve volt: 24,0

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1400
Supply-pump
pressure bar: 4,5...5,1

KSB solenoid-operated
valve volt: 24,0

2nd speed 1/min: 850
Charge press. hPa: 1400

Supply-pump
pressure bar: 6,1...6,7

KSB solenoid-operated
valve volt: 24,0

3rd speed 1/min: 1250
Charge press. hPa: 1400

Supply-pump
pressure bar: 7,7...8,3

KSB solenoid-operated
valve volt: 24,0

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -

KSB solenoid-operated
valve volt: 24,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1250
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 24,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 850
LDA stroke mm: 6,6
KSB solenoid-operated
valve volt: 24,0
Del. quantity cm³: 78,0...79,0
1000H.: (74,0...83,0)

2nd speed 1/min: 1500
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 24,0
Del. quantity cm³: 0,0...3,0
1000H.: -

3rd speed 1/min: 1470
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 24,0
Del. quantity cm³: 0,0...15,0
1000H.: -

4th speed 1/min: 1420
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 24,0
Del. quantity cm³: 15,0...55,0
1000H.: -

5th speed 1/min: 1370
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 24,0
Del. quantity cm³: 61,0...67,0
1000H.: (58,0...70,0)

6th speed 1/min: 1250
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 24,0
Del. quantity cm³: 82,0...83,0
1000H.: (79,5...85,5)

7th speed 1/min: 1100
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 24,0
Del. quantity cm³: 80,0...86,0
1000H.: (78,5...87,5)

8th speed 1/min: 850
Charge press. hPa: 1400

KSB solenoid-operated
valve volt: 24,0
Del.quantity cm3/: 82,5...89,5
1000H: (81,0...91,0)
9th speed 1/min: 700
Charge press. hPa: 850
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm3/: 78,0...79,0
1000H: (74,0...83,0)
10th speed 1/min: 500
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm3/: 95,5...109,5
1000H: -
11th speed 1/min: 500
Charge press. hPa: -
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm3/: 58,5...59,5
1000H: (54,5...63,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
Del.quantity cm3/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm3/: 4,0...6,0
1000H.: (0,0...10,0)
2nd speed 1/min: 400
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm3/: 0,0...4,0
1000H.: -
3rd speed 1/min: 325
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm3/: 12,5..20,5
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 150
Charge press. hPa: -

KSB solenoid-operated
valve volt: 24,0
Del.quantity cm3/: -
ind. 1000H: 80,0

2nd speed 1/min: 240
Charge press. hPa: -
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm3/: -
max. 1000H: 60,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation
K mm : 3,6...3,8
KF mm : -
MS mm : 0,8...1,2
SVS max. mm : 4,4
Operate control lever after each
manifold-pressure compensator pressure
change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U32
Edition : 17.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R304
Type number : 0 460 426 110
Customer Part-No. : 3 914 892

Customer-specific information
Customer : CDC

Engine : 6 BTA

Power k: 136
Speed 1/mi: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC) : -

Start of delivery block
Piston stroke mm: 1,15
mm: $\pm 0,02(0,06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 850
Charge press. hPa: 1400
Setting value mm: 2,1...2,5
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 850
Charge press. hPa: 1400
Setting value bar: 6,1...6,7
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1400
Del.quantity cm³/
1000H.: 82,0...83,0
KSB solenoid-operated
valve volt : 12,0
Dispersion cm³/ : 4,0
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm³/
1000H.: 58,5...59,5
KSB solenoid-operated
valve volt: 12,0

Low-idle speed regulation:

Speed 1/min: 375
Charge press. hPa: -
Del.quantity cm³/
1000H.: 4,0...6,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³/: 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1370
Charge press. hPa: 1400
Del.quantity cm³/
1000H: 61,0...67,0
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Charge press. hPa: -

Del.quantity : -
mind cm3/1000H.: 70,0
KSB solenoid-operated
valve volt: 12,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
Charge press. hPa: 1400
TD travel mm: 3,0...4,0
mm: -
KSB solenoid-operated
valve volt: -
2nd speed 1/min: 700
Charge press. hPa: 1400
TD travel mm: 0,1...0,9
mm: (0,0...1,2)
KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 850
Charge press. hPa: 1400
TD travel mm: 2,1...2,5
mm: (1,6...3,0)
KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1000
Charge press. hPa: 1400
TD travel mm: 2,9...3,7
mm: (2,6...4,0)
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1400
Supply-pump
pressure bar: 4,5...5,1
KSB solenoid-operated
valve volt: 12,0
2nd speed 1/min: 850
Charge press. hPa: 1400
Supply-pump
pressure bar: 6,1...6,7
KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 1250
Charge press. hPa: 1400
Supply-pump
pressure bar: 7,7...8,3
KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 500

Charge press. hPa: -
KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1250
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 850
LDA stroke mm: 6,6
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 78,0...79,0
1000H.: (74,0...83,0)
2nd speed 1/min: 1500
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 0,0...3,0
1000H.: -
3rd speed 1/min: 1470
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 0,0...15,0
1000H.: -
4th speed 1/min: 1420
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 15,0...55,0
1000H.: -
5th speed 1/min: 1370
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 61,0...67,0
1000H.: (58,0...70,0)
6th speed 1/min: 1250
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 82,0...83,0
1000H.: (79,5...85,5)
7th speed 1/min: 1100
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 80,0...86,0
1000H.: (78,5...87,5)
8th speed 1/min: 850
Charge press. hPa: 1400

KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 82,5...89,5
 1000H: (81,0...91,0)
 9th speed 1/min: 700
 Charge press. hPa: 850
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 78,0...79,0
 1000H: (74,0...83,0)
 10th speed 1/min: 500
 Charge press. hPa: 1400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 95,5...109,5
 1000H: -
 11th speed 1/min: 500
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 58,5...59,5
 1000H: (54,5...63,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
 Del.quantity cm³/: 0..3
 1000H.: -

Electr. shutoff:

Speed 1/min: 375
 ELAB volt: -
 Del.quantity cm³/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 4,0...6,0
 1000H.: (0,0...10,0)
 2nd speed 1/min: 400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 0,0...4,0
 1000H.: -
 3rd speed 1/min: 325
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 12,5...20,5
 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 150
 Charge press. hPa: -

KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: -
 ind. 1000H: 80,0

2nd speed 1/min: 240
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: -
 max. 1000H: 60,0

Shutoff electromagnet:

Cut-in
 min. voltage : 10,0
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
 K mm : 3,6...3,8
 KF mm : -
 MS mm : 0,8...1,2
 SVS max. mm : 4,4

Remarks:

Operate control lever after each
 manifold-pressure compensator pressure
 change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U29
Edition : 17.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R304
Type number : 0 460 426 110
Customer Part-No. : 3 914 893

Customer-specific information
Customer : CDC

Engine : 6 BTA

Power k: 136
Speed 1/mi: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Start of delivery block
Piston stroke mm: 1,15
mm: +0,02(0,06)

Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 850
Charge press. hPa: 1400
Setting value mm: 2,1...2,5
KSB solenoid-operated
valve volt: 24,0

Supply-pump pressure:

Speed 1/min: 850
Charge press. hPa: 1400
Setting value bar: 6,1...6,7
KSB solenoid-operated
valve volt: 24,0

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1400
Del.quantity cm³/
1000H.: 82,0...83,0
KSB solenoid-operated
valve volt : 24,0
Dispersion cm³ / : 4,0
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm³/
1000H.: 58,5...59,5
KSB solenoid-operated
valve volt: 24,0

Low-idle speed regulation:

Speed 1/min: 375
Charge press. hPa: -
Del.quantity cm³/
1000H.: 4,0...6,0
KSB solenoid-operated
valve volt: 24,0
Dispersion cm³ / : 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1370
Charge press. hPa: 1400
Del.quantity cm³/
1000H: 61,0...67,0
KSB solenoid-operated
valve volt: 24,0

Start:

Speed 1/min: 100
Charge press. hPa: -

Del. quantity : -
mind cm³/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
Charge press. hPa: 1400
TD travel mm: 3,0...4,0
mm: -

KSB solenoid-operated
valve volt: -
2nd speed 1/min: 700
Charge press. hPa: 1400
TD travel mm: 0,1...0,9
mm: (0,0...1,2)

KSB solenoid-operated
valve volt: 24,0
3rd speed 1/min: 850
Charge press. hPa: 1400
TD travel mm: 2,1...2,5
mm: (1,6...3,0)

KSB solenoid-operated
valve volt: 24,0
4th speed 1/min: 1000
Charge press. hPa: 1400
TD travel mm: 2,9...3,7
mm: (2,6...4,0)

KSB solenoid-operated
valve volt: 24,0

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1400
Supply-pump pressure bar: 4,5...5,1

KSB solenoid-operated
valve volt: 24,0
2nd speed 1/min: 850
Charge press. hPa: 1400

Supply-pump pressure bar: 6,1...6,7

KSB solenoid-operated
valve volt: 24,0
3rd speed 1/min: 1250
Charge press. hPa: 1400

Supply-pump pressure bar: 7,7...8,3

KSB solenoid-operated
valve volt: 24,0

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -

KSB solenoid-operated
valve volt: 24,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1250
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 24,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 850
LDA stroke mm: 6,6
KSB solenoid-operated
valve volt: 24,0
Del. quantity cm³/: 78,0...79,0
1000H.: (74,0...83,0)

2nd speed 1/min: 1500
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 24,0
Del. quantity cm³/: 0,0...3,0
1000H.: -

3rd speed 1/min: 1470
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 24,0
Del. quantity cm³/: 0,0...15,0
1000H.: -

4th speed 1/min: 1420
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 24,0
Del. quantity cm³/: 15,0...55,0
1000H.: -

5th speed 1/min: 1370
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 24,0
Del. quantity cm³/: 61,0...67,0
1000H.: (58,0...70,0)

6th speed 1/min: 1250
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 24,0
Del. quantity cm³/: 82,0...83,0
1000H.: (79,5...85,5)

7th speed 1/min: 1100
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 24,0
Del. quantity cm³/: 80,0...86,0
1000H.: (78,5...87,5)

8th speed 1/min: 850
Charge press. hPa: 1400

KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 82,5...89,5
1000H: (81,0...91,0)
9th speed 1/min: 700
Charge press. hPa: 850
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 78,0...79,0
1000H: (74,0...83,0)
10th speed 1/min: 500
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 95,5...109,5
1000H: -
11th speed 1/min: 500
Charge press. hPa: -
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 58,5...59,5
1000H: (54,5...63,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
Del.quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 4,0...6,0
1000H.: (0,0...10,0)
2nd speed 1/min: 400
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 0,0...4,0
1000H.: -
3rd speed 1/min: 325
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: 12,5...20,5
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 150
Charge press. hPa: -

KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: -
ind. 1000H: 80,0

2nd speed 1/min: 240
Charge press. hPa: -
KSB solenoid-operated
valve volt: 24,0
Del.quantity cm³/: -
max. 1000H: 60,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm : 3,6...3,8
KF mm : -
MS mm : 0,8...1,2
SVS max. mm : 4,4

Operate control lever after each
manifold-pressure compensator pressure
change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U31
Edition : 17.05.89
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R304
Type number : 0 460 426 110
Customer Part-No. : 3 915 290

Customer-specific information
Customer : CDC

Engine : 6 BTA

Power k: 136
Speed 1/mi: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Start of delivery block
Piston stroke mm: 1,15
mm: $\pm 0,02(0,06)$

Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 850
Charge press. hPa: 1400
Setting value mm: 2,1...2,5
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 850
Charge press. hPa: 1400
Setting value bar: 6,1...6,7
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1250
Charge press. hPa: 1400
Del.quantity cm³/
1000H.: 82,0...83,0
KSB solenoid-operated
valve volt : 12,0
Dispersion cm³/ : 4,0
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm³/
1000H.: 58,5...59,5
KSB solenoid-operated
valve volt: 12,0

Low-idle speed regulation:

Speed 1/min: 375
Charge press. hPa: -
Del.quantity cm³/
1000H.: 4,0...6,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³/: 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1370
Charge press. hPa: 1400
Del.quantity cm³/
1000H: 61,0...67,0
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Charge press. hPa: -

Del.quantity : -
mind cm3/1000H.: 70,0
KSB solenoid-operated
valve volt: 12,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
Charge press. hPa: 1400
TD travel mm: 3,0...4,0
mm: -
KSB solenoid-operated
valve volt: -
2nd speed 1/min: 700
Charge press. hPa: 1400
TD travel mm: 0,1...0,9
mm: (0,0...1,2)
KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 850
Charge press. hPa: 1400
TD travel mm: 2,1...2,5
mm: (1,6...3,0)
KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1000
Charge press. hPa: 1400
TD travel mm: 2,9...3,7
mm: (2,6...4,0)
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1400
Supply-pump
pressure bar: 4,5...5,1
KSB solenoid-operated
valve volt: 12,0
2nd speed 1/min: 850
Charge press. hPa: 1400
Supply-pump
pressure bar: 6,1...6,7
KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 1250
Charge press. hPa: 1400
Supply-pump
pressure bar: 7,7...8,3
KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 500

N26

Charge press. hPa: -
KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1250
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting
point hPa: 850
LDA stroke mm: 6,6
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/ 78,0...79,0
1000H.: (74,0...83,0)
2nd speed 1/min: 1500
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/ 0,0...3,0
1000H.: -
3rd speed 1/min: 1470
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/ 0,0...15,0
1000H.: -
4th speed 1/min: 1420
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/ 15,0...55,0
1000H.: -
5th speed 1/min: 1370
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/ 61,0...67,0
1000H.: (58,0...70,0)
6th speed 1/min: 1250
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/ 82,0...83,0
1000H.: (79,5...85,5)
7th speed 1/min: 1100
Charge press. hPa: 1400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/ 80,0...86,0
1000H.: (78,5...87,5)
8th speed 1/min: 850
Charge press. hPa: 1400

KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 82,5...89,5
 1000H: (81,0...91,0)
 9th speed 1/min: 700
 Charge press. hPa: 850
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 78,0...79,0
 1000H: (74,0...83,0)
 10th speed 1/min: 500
 Charge press. hPa: 1400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 95,5...109,5
 1000H: -
 11th speed 1/min: 500
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 58,5...59,5
 1000H: (54,5...63,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
 Del.quantity cm³/: 0..3
 1000H.: -

Electr. shutoff:

Speed 1/min: 375
 ELAB volt: -
 Del.quantity cm³/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 4,0...6,0
 1000H.: (0,0...10,0)
 2nd speed 1/min: 400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 0,0...4,0
 1000H.: -
 3rd speed 1/min: 325
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 12,5...20,5
 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 150
 Charge press. hPa: -

KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: -
 ind. 1000H: 80,0

2nd speed 1/min: 240
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: -
 max. 1000H: 60,0

Shutoff electromagnet:

Cut-in
 min. voltage : 10,0
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
 K mm : 3,6...3,8
 KF mm : -
 MS mm : 0,8...1,2
 SVS max. mm : 4,4

Remarks:

Operate control lever after each
 manifold-pressure compensator pressure
 change.

Correction at adjusting nut (46)